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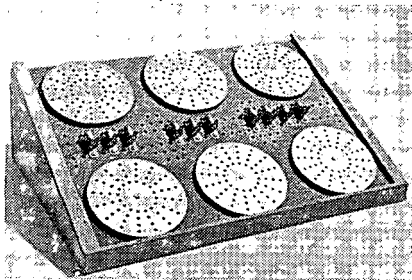
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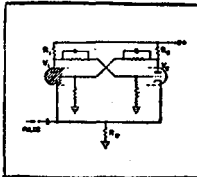
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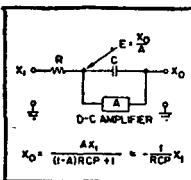
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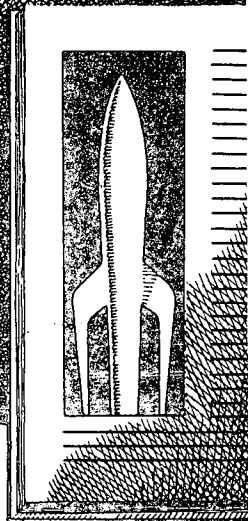
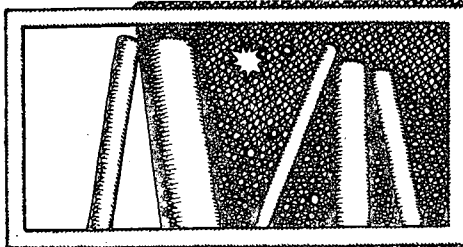
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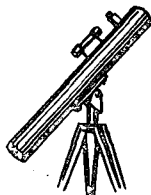


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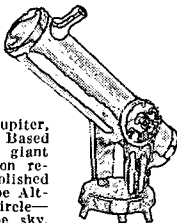
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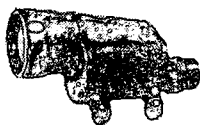
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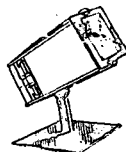
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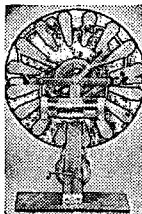
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CONTENTS

NOVELLA

THE POD IN THE BARRIER *by Theodore Sturgeon* 8

NOVELETS

THE SLY BUNGERHOP *by William Morrison* 72

SHADOW WORLD *by Clifford D. Simak* 108

SHORT STORIES

DOAT AGE *by John Boland* 49

THE DARK STAR *by William Tenn* 90

SCIENCE DEPARTMENT

FOR YOUR INFORMATION *by Willy Ley* 61

The Earliest Robot

FEATURES

EDITOR'S PAGE *by H. L. Gold* 6

FORECAST 103

GALAXY'S FIVE STAR SHELF *by Floyd C. Gale* 104

Cover by VIRGIL FINLAY Showing CAPT. AHAB OF SPACE

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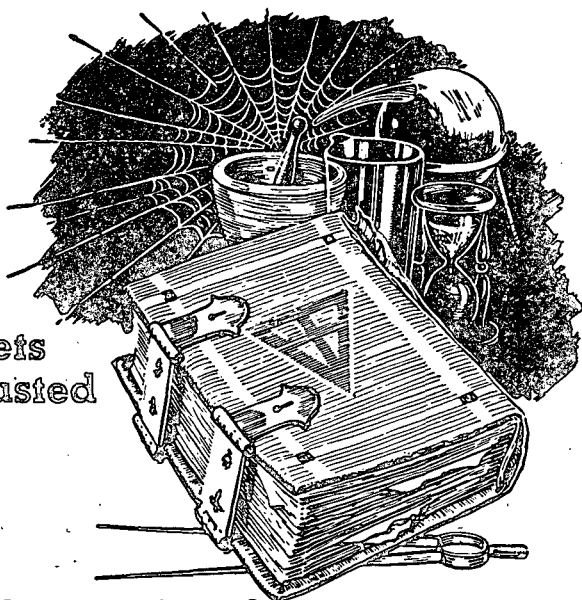
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MEA CULPA

OWING to circumstances entirely within my control, a recent editorial of mine got (justifiably) clobbered. I repeated, with innocent merriment, an anecdote about Rex Stout, mystery writer and amateur gardener, winning a \$100 bet by shrewdly slitting a row of kernels out of young corn to prove that cobs do not *invariably* have odd numbers of rows of kernels.

Some anecdote. It caused fist fights, arguments and the most caustic language I've ever seen allowed in the U.S. mail—and one chap, Albert N. Walker of No. Sacramento, Calif., lost \$10 in a bet. I have the proof that the bet was lost fairly: he sent me a cob with ten rows.

However, I didn't make up the anecdote. I read it in a magazine intended for those who either live in New York or think it's a nice place to visit, and thus is about anywhere but New York. It is also notorious for its hostility toward science fiction. If for no other reason, I should have known better than to repeat one of its items without checking first.

So I'm checking. Unfortunately, the only immediate source is the *Encyclopedia Americana*,

1940 edition. Here are some passages that astonished at least me. (If you lose bets on these say-sos, Mr. Walker, please take it up with the Americana Corp.)

"Corn is America's most important crop. It is grown on as great an acreage and has a value greater than that of wheat, oats, barley, rye, and rice combined . . .

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(Continued on page 48)

Looking For Us, Professor?

"Hmm, yes. I was just cogitating upon the causes of GALAXY Science Fiction's phenomenal growth in popularity."

"And that needs an explanation, Professor?"

"From a socio-psychological viewpoint, most definitely. To what do you attribute the constant increase of interest?"

"Well . . . let's try it this way, Professor. Suppose we ask the questions and you answer them."

"So? A bit unusual, but go right ahead."

"Do you think atomic doom is the only future for mankind?"

"Not exactly, but the newspapers and the commentators—"

"Of course. Well, we SHOW other possible futures. Do you believe we will be able to leave the Earth?"

"Eventually, perhaps. But not in our lifetime."

"We don't agree. Assuming you're right, though, isn't that all the more reason to want to know what we'll find on other planets, Professor?"

"I think I see what you mean."

"Can we achieve immortality?"

"Ah. Hum. I've often wondered."

"And travel to different eras in time?"

"That would be exciting."

"And you've been trying to discover why GALAXY is growing so popular? Every idea we've mentioned—and a lot more, besides—is treated dramatically and vividly in GALAXY! You really live them!"

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By THEODORE STURGEON

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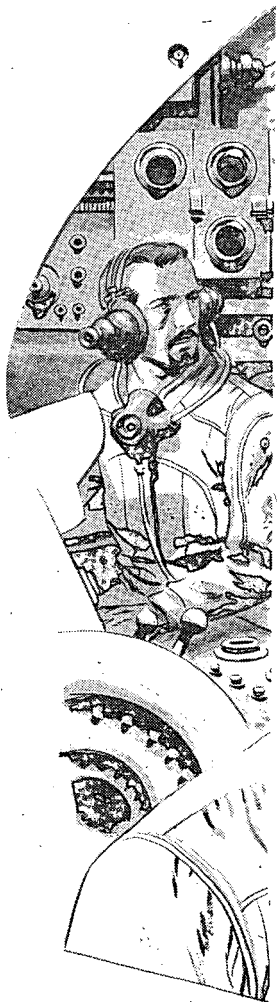
It was a wall in space . . . with no way to go over or under or around or through it . . . and it was those outside who were the prisoners!

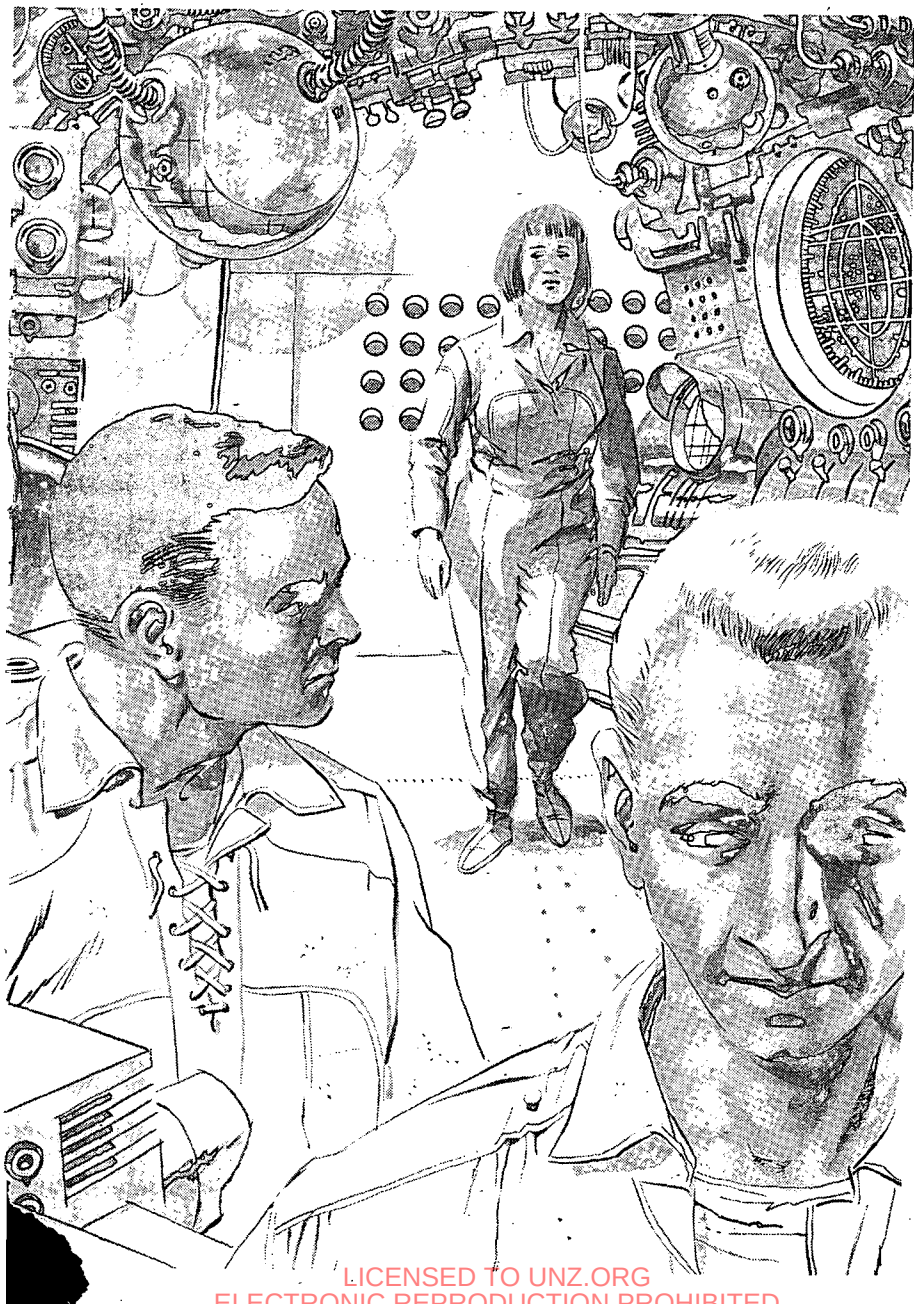
Illustrated by WOOD

A LOUSY mission. Of course, it was a volunteer (i.e., suicide) mission, and for that you take what comes. They may wine you and dine you and honor you and your tribe for three generations coming and going, in the days before you start. But once you're on your way, you can't expect it to be a pleasure. Everything about suicide is death, not just the final part.

Potter picked his cuticles and didn't know he was doing it, even while he was looking you straight in the eye, talking to you at the time. Try shipping out with that. That's what bothered me the most, anyway.

Most of the others seemed to





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- be bugged by Donato. He had a psychosomatic cough that passed all the preflight medics for the simple reason that he had never had such a thing before, probably because he had never gone out to die before. Me, I guess I have soaked up enough of that "profound compassion" of the Luanae to defend me against that kind of annoyance. But Potter the Picker now—that got to me, I admit it.

Little Donato was always trying to please. Some people are annoying because once in a while they just don't go out of their way to make things a little happier for anyone else. Donato hit the other extreme, always making way, never disagreeing, forever finding some way to help or get a cushion or move back or bring or say or not-say whatever anyone else might want, until you wanted to scuttle the ship just so it would take him with the lot of you.

The main trouble was, he was so helpful he never gave you anything to complain about. Time after time, I would see one or the other of the crew suddenly wheel on him out of a dead silence and roar at him to get the hell out.

"Why, sure, friend," Donato would always say, and smile, and get the hell out, leaving whoever it was beating himself on the temples.

POTTER was a specialist in field mechanics and Donato was a top ballistics man. England was an ugly man with big ears and wet eyes who kept to himself pretty much, only he ate loud. He was an expert in missile control. And I'm Palmer; I heard there was a man in Alpha Sigma IV once who knew more about trans-spatial stress than I do, but I don't believe it.

The four of us had four different ideas for breaking the Luanae Barrier and that's what we were on our way to do. All four ideas were pretty far-fetched and the odds were much in favor of the Barrier's getting us, but it had to be done. After everything reasonable has been tried on something that must be done but can't be done, you have to start calling in the crackpots. I had to bring along my perfectly valid theories with the three crackpots because it was the only way they would ever get tried.

And that was the expedition personnel. The others were just operations. A skipper, Capt. Steev, strictly ferryboat, who knew everything he had to know about running the ship and getting her there, and didn't know, didn't care, wouldn't talk about anything else. Some of the others griped about the kind of skipper we had, but not me. He had to be expendable and he was. He

had to know his job and he did. So?

The utility monkey was funny for about half an hour of anybody's time, and forever after that just unpleasant to have around. He was sort of misshapen, with a head much too big for his body and a left leg with too much bounce in it. It's been so many hundreds of years, I guess, since anyone had anything drastic wrong physically that nobody can get used to it any more. You know how to be polite about it when you do encounter it, and back home you know how to forget you saw it pretty thoroughly, but on a spacecan you never get the chance.

Personally, I think we should have shipped without a utility man. I don't know if I feel so strongly about it that I'd have done the dirty work on the ship myself, but maybe one of the others would. I don't care how much humanity progresses, there is always a little room somewhere for the unskilled hand, lifting and mopping and cleaning out the sewer lines when something gets stuck. This monkey we had went by the name of Nils Blüm, and nobody paid much attention to him.

And then we had the unemployed CG. Did you ever hear of an unemployed crew's girl — on a

ship? I don't mean kicking around the spaceports waiting to ship out, unemployed that way. I mean right there aboard, she had nothing to do.

CGs as a whole are a dowdy bunch. There's no point in putting cute clothes, cute tricks and heady perfume aboard a spacecan. You don't need to stimulate anything; that takes care of itself as time goes by. They keep themselves clean and wait around till they're needed. They're a thick-skinned, slow-witted lot because there's no sense in sensitivity in their line. It just makes trouble.

THIS Virginia we shipped, she came from the bottom of the underside of the sump. She was everything that distinguishes a CG from a real Earthside female woman. She had a wide face that was closed and bland as a bank-vault door on the Sabbath, and a build that was neither this nor that but sort of statistically there. With a normal personality, or none at all, she might have had a job to do, and would have done it. But with the personality she had . . .

Well, at first you just didn't like her, and after a while you couldn't abide her, and finally you got the feeling about her that she was a lower animal, that you couldn't stand what the others

might think of you if you went near her. There was a lot of difference of opinion aboard on a lot of subjects, but not on that one.

So that's what we had, believe it or not, an unemployed CG.

I read someplace about an Arctic explorer back in the days where the poles of Old Earth were covered with ice. He used to bring along the ugliest woman he could find to cook. Her other function was to inform him when he'd been away from civilization too long, which she did by beginning to look good to him. Well, maybe, given time enough, we'd have found something for this Virginia to do. But given that much time, we'd all be dead.

Oh, she was a great help aboard, Virginia was.

That personality. I thought a lot about that personality of hers, just because on a long haul you have time to think a lot about everything . . . I knew a kid in school who had a face so insulting, so all-fired arrogant when it was relaxed that the teachers used to throw him out of the class just for sitting there. At least until they learned it was only physical and had him remodeled. Well, maybe Virginia's personality was something like that. Maybe she couldn't help it.

She had a way of carrying a cloud of what Potter once called

"retroactive doubt." When she was anywhere near you, you breathed it. You'd say something and she would repeat it, and by the way she did it—I can't describe it at all, but I'm telling you the truth—by the way she did it, she made whatever you'd said into a falsehood. Sometimes it suddenly sounded like a lie and sometimes like a mistake and sometimes like something you could be expected to believe because you were ignorant. I mean just repeating your own words.

You'd say, "Back home, I've got a silver-headed walking stick," and she'd say, "Yeah, you've got a silver-headed walking stick," in that dull flat drone of hers, and, by damn, you'd find yourself arguing with her that you *did* have one. I mean fighting, defending yourself, the way you only can when you doubt something yourself. Then she'd go away and you'd sit and stew about the walking stick, wondering where it was you last saw it, wondering if you actually did have it any more, if the head of it was real silver.

It didn't have to be something that was important at all; she could make you feel that way. When it was important . . . shipmate, better not mention it around her. I think you could tell her your name and she'd make you doubt it.

As a matter of fact, now I think of it, she did just that to me, the day I first saw her (which is traditionally the day after upship). I walked up to her in the messhall and said, "My name's Palmer," and she looked at me without blinking and said flatly, "Your name's Palmer," and made me say, before I could stop myself, "No—really it is," and then skulk off feeling damn strange.

WE'D taken off with a null-grav tug and slipped into second-order matrix within six hours—all very fast and painless, thanks to the Luanae. Both devices were theirs, and so was the ship's power plant, and so was the sub-etheric communication we could get loud and clear for almost four full days after upship. Do you know how far that would be in miles? Here, figure it out—four days is enough to take you halfway to Sirius, and that's a powerful long reach for a communicator phasing out of normal space and finding your receiver.

I recall especially that fourth day's bulletins, because we all gathered around to soak them up and chew them thoroughly. We knew that we'd hear nothing else from Earth Worlds from there on for the six ship-weeks it took us to get out to the Luanae Bar-

rier, way out on the other side of the Coalsack.

We cheered the whiffleball scores and the chess results and laughed too loud at the human-interest bit about the kid who brought the Nova Mars stinkdog into school; and then there was the last real news we heard, that Chicago had been frozen from Northern Ontario Parish clear south to the Joplin city limits, back on Old Earth.

Everybody tsk-tsked.

"Well," said Potter, looking at his finger, "I guess there's no other way."

"But people always get killed in a freeze," said big-eared England.

"More people get killed in a riot," I remember saying.

About then, the signal faded, very abruptly, as it does when you get out of range in sub-space, and we all sat around worrying a bit.

It was funny, that news of all news being the last we heard. It was like a nudge, a send-off. A reminder.

Old Earth wasn't the only place where there were riots, not by a sight. Of eighteen planets in the two so-called Earth Galaxies, only Ragnarok and Lu-na-Luna were not bulging at the seams, and they'd be as bad as the others in a generation. By and large, people behaved them-

selves . . . but there were so *many* of them! The law of averages dictated that, in that number, there had to be so many troublemakers, there were bound to be so many riots—and there had to be more troublemakers and riots all the time.

Unless we broke the Luanae Barrier.

We owe the Luanae a lot. As I said before, a good deal of our most advanced technology is built on transmissions from the Luanae. A very old people, ancient before old Sol the First was a sun. Wise and compassionate. That was the real cliché: the compassionate Luanae. True enough, though.

No one had ever seen them, of course—the Barrier took care of that. No one understood the exact method of their transmissions, though they tried their best to explain. You'd get in range and then there it was, they were talking to you, inside your head. What they said was true—that you could bank on, swear by, hang your hat or your life on.

SOME things have to be proved. But not anything the Luanae said. You might not believe it if you heard about something they said, from me, say. But go hear it from them—you'll know it's so. Never in the three hundred years of contact had

anything they said turned out to be anything but exactly—really exactly—so.

They say that at first humanity took it with a dose of salts—we are a suspicious species. But although the Luanae couldn't give us the specs of a machine like theirs—they insisted that their thought transmitter was only a machine—they were able to describe an odd little recorder that would play back and "sound" like the original. When a few million of those had been made and distributed, there wasn't any suspicion any more. It just blew away.

But population-pressure rioting isn't as easy to dispose of as inbred suspicion. Put enough people in a limited area and you'll have trouble. Put too much in the same area and—look out. Now we had sixteen worlds with too much humanity, and two more with almost enough to start trouble. And all we could do was watch and feel, and freeze whole sections when the thing boiled over.

After each freeze, the United Planet men would spread through the countryside, picking up the mangled corpses from ground-cars and aircraft which had smashed up when everyone blacked out, and making the millions of others comfortable where they lay. They'd wake up in due

course, with no sense of time passed, but the dead would have been long buried and the troublemakers located and treated, and the immediate causes of the riot, whatever they might be (it didn't take much) adjudicated and put right.

It was generally suspected that the UP boys declared riot and froze sections on somewhat less excuse than they really needed, but most people didn't object. At least it kept a few million people, each time, from breeding any more for six to eight months. But nobody denied that this was pure stopgap.

As to halting reproduction altogether for a while, the suggestion came up monotonously in the Council sessions and was as monotonously knocked down. Enforced sterility is counter to the most basic of civil rights, and the Earth Worlds would die before they would relinquish any basic right.

They were dying, too.

And there, hanging just out of reach, were the Luanae Earths — eight fine Earth-type planets circling three suns in Galaxy Three. Eight beautiful worlds, ready and waiting; we wanted them and the Luanae wanted us to have them. And all we could do was watch them swing by and feel wistful, because of the Barrier.

THE Luanae are not terrestrial. As far as can be understood, they have a boron metabolism and compete in no way with us hydrocarbon types. They need nothing from us and wouldn't take it if they did need it.

When they say they have those worlds to give us, when they say the worlds are suitable, and they say for sure that those are the only planets left in this entire quadrant of the Universe — why, you can bet on it. (They're the ones who found Luna-Luna and Ragnarok for us, when the Earth Worlds had despaired of ever finding another terrestrial planet.) We also have their assurance that in the other quadrants are literally thousands of terrestrial planets; but we will need a totally new technology to reach them, and that will take us maybe four centuries to acquire, even with their help.

Well, the Earth Worlds wouldn't last four centuries without the Luanae planets. With them, though — with them, it might be done. All we had to do was reach them. All we had to do was penetrate the Barrier.

The Barrier was a sphere in space — not a thing, exactly, just a place which could be represented on a cosmimap as a sphere. It was a fair-sized sphere; it englobed a third of the Luanae Galaxy, including, of course, the

three little Luanae home-planets and the eight lovely, unreachable Luanae Earths.

All it did, that Barrier, was to draw a line. Anything outside of it was left strictly alone. Anything penetrating it was instantly tracked, hunted and smashed by Luanae missiles. And anything that got cute enough to duck inside and out again was destroyed by the Barrier itself, which had the simple ability of reversing the terrene-sign of a random third of the atoms in any matter it touched.

You can imagine what happened to anything from a micro-meteorite to a sun that got exposed to it. Shot through and through with contra-terrene matter. Disappeared in a single ferocious flash.

The Luanae Galaxy was discovered three hundred years ago by a creaky old Earth survey ship powered by Teller-formula atomics and a primitive subspace drive which barely quadrupled effective light-velocity.

The first thing the ship — it was called the *Luanae*, after its skipper's wife and daughter, both of whom were named Luana — the first thing they saw was the Luanae Galaxy, a long narrow elliptical one with a dark band, the perfect arc of a circle, a third of the way down the long axis. It looked artificial, so they hobbled

over there to investigate.

It was artificial, all right. It was the Barrier, or, rather, the segment of space through which the Barrier had removed all impinging matter. And when they got within a dozen light-years of it, they were in range of the beings who came to be known by the same name as the ship and the galaxy — the Luanae.

They said *Stop*.

They said it simultaneously inside the heads of everyone aboard. They said it with that encasement of utter truth and total believability. They said it (they told us later) with an automatic machine set up eons ago, to warn away any intelligent life from their Barrier. But when the ship *Luanae* responded (by stopping), it wasn't any machine that spoke next. The strange creatures set up such a welcome, such a warm, admiring, congratulatory flood of thought that they say all hands looked at each other in amazement and started to weep.

AND along with the welcome — a warning. *Don't come any closer.*

They threw a few million cubic meters of rubble up from the inside of the Barrier and let the astonished crew watch the near margins of the invisible Barrier light up with a hellish three-

hour show of destruction. They urged experiment, suggesting that the survey ship throw something at the Barrier.

The ship did. Whatever matter penetrated was overtaken and destroyed by what appeared to be tiny hunting missiles. Whatever matter was angled through the Barrier's skin, so that it would cut a chord and emerge again, splashed into flame as it left. The men on the ship knew, down to the marrow, that they were welcome — thirstily, ardently welcome.

And they knew that they were warned.

THE ship hung outside the Barrier for over a year, setting down what turned out to be the greatest treasure ever brought home by a vessel since time began. Knowledge — the knowledge that put cold-fusion power plants on all the Earth planets, in all the factories. New designs. New principles of mathematics and spatial mechanics. New methods, new ideas, much of it material Earth possibly might have discovered for itself in a thousand years, most of it material we never could have found unaided.

And every bit of it was valid. Every bit of it held out the promise of more, once we had assimilated this incredible cargo.

When the survey ship *Luanae* reached the Earth Worlds, they say that the suspicion was thicker than anyone alive today could readily understand. They say they were going to court-martial the skipper for wasting all that time out there making up stories. And they say there was a powerful movement to suppress everything they brought back, out of fear that the new technology might in some way be a Trojan horse.

But sheer cussed human curiosity got the better of all that, and, though they started slowly, it wasn't too long before the *Luanae* devices and principles proved themselves out — spectacularly.

And in a few years, humanity was back again. In force. The main idea was to breach the Barrier — peaceably if possible, but breach it. Most of the ships, most of the men, did not make the attempt, so great was the impact of the *Luanae* truth and fellow feeling.

Some did try, though, ramming, bombing, bringing up hyper-magnetic generator ships to try warping the intangible structure of the Barrier. All failed; those who touched it died. Whenever that happened, there was a great soundless cry of mourning from the *Luanae*, but the Barrier remained.

WHEN the survey ship discovered them, the Luanae had explained simply and clearly why the Barrier was there and why it stayed. It seemed too simple a story, and buried as it was in such a mass of other data, it was overlooked or disbelieved. Mind you, that was before the Luanae had been recorded, before the human millions could "hear" for themselves what a transmission from them was really like. Probably the Luanae realized this; at any rate, the story of the Barrier was the first Luanae recording to be widely distributed and its impact was huge.

Such a simple story . . . a people in some ways like humanity, perhaps a little swifter technologically, perhaps in some ways less demanding . . . well, they lived a good deal longer, took a good deal less from the land to keep themselves alive.

They had some things to be proud of — an art that can only be imagined outside the Barrier, and music of a kind. They did "send" some of their literature, as you know . . . ah.

Then they had a number of things to be ashamed of. Some wars, big ones. Three times they all but destroyed themselves, and climbed back up again. Then there was a long flowering, which seemed like something good,

something fine. They developed a compassion, a philosophy of respect for the living and harmony with the laws of the Universe — more than a religion, more than simply a way of life and thought. Through it, a good many things became unnecessary to them and they forgot they had hands . . .

When they were attacked from space (this happened countless thousands of years ago), they could not defend themselves at all. They had forgotten the largest part of their fabulous technology; their machines were corroded, their skills had died, and worst of all, they had forgotten how to organize, how to be many men under one man's hand — for the duration.

So they were enslaved.

They broke their chains at length — at some thirty thousand years' length. When they had driven out the invader, and followed him and destroyed him and all his worlds, they were a frightened and sobered people. Their taste of quiet, of personal and individual fulfillment, was a touch of paradise to them and they deeply resented its loss.

Their return to material power was (in their minds) a descent and a degradation. Yet they had learned a lesson and learned it well. They made up their minds to defend themselves in such a way that never again — positive-

ly, absolutely and forever — never again would they be attacked, no matter how long it might be, no matter how deep and distantly they buried their souls in their nameless, nebulous delights.

So, after due consideration, they decided on the Barrier. They threw their total productivity — enormous, after their last war — and all their ingenuity into a defense to end all defenses. They marked out a segment of the surrounding space, purposely enclosing ten times the volume which their computers specified as the most that they could conceivably ever need for themselves.

THEY built a planetoid and stabilized it in an orbit around a dead sun not far from their cultural hub. This control planetoid, in ways as yet far too advanced for humanity to grasp, generated and maintained the Barrier itself. In addition, it gathered up cosmic debris and sucked it in and, with its mammoth automatic machinery, transmuted and smelted and cast and machined flight after flight of missiles — large and small. These were racked and stored by the hundreds of thousands, stationed throughout the Barrier-protected space in a myriad of automatically computed orbits.

And so it was that anything which penetrated the Barrier,

from any quarter, was instantly hunted down and killed.

There was some alarm at first over the fact that the Barrier, by its nature, must destroy anything leaving, as the missiles destroyed everything entering. But there seemed no valid answer to the question "Why not?" The Luanae weren't going anywhere. They had space enough, and ten times space enough, for any roaming they chose to do. And they chose to do very little, for their orientation was back toward those golden years of introspection, of contemplative, inward self-realization, and their hunger for it was very great.

And so they locked the Universe out and themselves in — And threw away the key.

The control planetoid was a machine — automatic, self-repairing, powered by cold fusion of two isotopes of hydrogen, and it could always get hydrogen. It made missiles and used them. When it used them, it gathered up the dust that was left and salvaged it and made more. When any outbound matter was destroyed by the inner surface of the Barrier, it gathered up the radiant energy of the pyre, and the ashes, and brought them in and used them. It was impregnable, inexhaustible, tireless and immortal. It brought safety; it brought peace.

It brought death to a nomad people, so vastly superior in intellect and in what has been translated from the Luanae "sendings" as "size-of-soul" that the Luanae, by that time steeped again in their unthinkable metaphysics, awoke to watch them approach, awe-struck, alive and aware of them. What they were can never now be known. Even the Luanae do not know. They say only that their thirty thousand years of slavery to the creatures who invaded them was but a scratch, a toe-stub, compared to the wound they suffered in the realization that they caused the destruction of these nameless nomads.

The creatures swept down on the Barrier, unable to detect something unique in the Universe, unwarned and unprepared, and were swallowed up by it.

It is impossible to describe the impact of this event on the Luanae. Already deeply involved in their ancient philosophy, in tune with the Universe and respecting all natural things — compassionate, life-reverent, humble and kind — they watched the destruction of their infinite superiors with an infinite horror. They realized then the extent of their folly, their crime in the creation of the Barrier.

Already far gone again away from their technological peak,

they again restored it. They surpassed it. They mobilized to pull down what they had put up, driven by guilt and horror at the thing they had done. It was the crucifixion of crucifixions, the murder of murders with the Messiah of Messiahs their irreplaceable victim.

AND they failed. They had built too well. The planetoid destroyed everything that approached it. It was surrounded by miniature versions of the great Barrier, some turned inside out so that the disintegrating surface was encountered first. It picked apart, in a microsecond, everything they threw at it, ate it, digested it, and was nourished.

The Luanae then undertook a frightening sacrifice, an appalling expense. In an effort to overload the planetoid's defenses, they flung up thousands of missiles, ships, lumps of rock and debris, hurling it every which way between their stars and planets. Implacably the planetoid located the intrusive matter, compared it with its matrix of stored information on allowable bodies and their permitted circlings, and sought out and destroyed the offending ones, quite uncaring that many of them, tragically many, were manned . . .

And, in time, the Luanae discovered that the planetoid was

producing missiles and energy past its original capacity, consuming more than it had originally been designed to handle, computing more things more quickly. At that, they ceased to attack it, realizing belatedly that they had forced it to enlarge and strengthen itself — the only course open to a self-repairing machine stressed beyond its original endurance.

They fell back then on the only thing left for them to do, as creatures of efficient conscience. They sent out warnings.

They devised transmissions which covered the entire spectra of intelligence, transcending language, surpassing even symbolism. They set up automatic beacons to radiate the warning in all directions, each beam overlapping the next. Bitterly, they organized a trade of monitors to watch over the automatic machines, which they never again would trust. The monitors were ritualized like a priesthood, drilled like slave-legions, marinated in the impulses of duty.

Once that was done and tested past any conceivable fault or failure, they settled to a new level of life, neither blindly mechanical, like that which had produced the planetoid, nor vegetative and contemplative, like that which had left them open to slavery, but a middle ground,

based on the ancient convictions of respect for life and its ways in the rigid and marvelous frame of the Universe; and implemented it by an unrusting technology.

So it was that the Luanae were at last in a position to make their greatest and most mature discovery — a thing known to each of them as individuals, but until now unrealized in terms of life-groups:

A man cannot exist alone. He must be a member of something, a piece, an integer of some larger whole. Men plus men make cities, which band together to form states, then countries, then worlds, and never can a sole unit exist alone and unsupplied. Communication and intercourse are necessary and vital; without them, the lone unit is a brief accident unnoticed by the Universe and forever forgotten.

So, behind their gigantic ghastly barricade, the Luanae at last acknowledged membership in a grouping greater than species, and declared themselves belonging to Life and dedicated to the survival of its total membership.

This, then, was the self-imprisoned people discovered by an Earth scout ship, in the business of locating terrestrial planets for humanity. The Luanae rose with a shout at the sight of them. This was Life — life to aid and life to share. For until Earth came

to them, they saw themselves dying like a surrounded city, like a lone traveler, like an amputated limb, like any other life separated from its sustaining body.

Earth brought life to the Luanae, and the Luanae enlisted themselves in Earth's search for life.

A LOUSY trip. A suicide trip, with a skipper and utility monkey horse-blinded by their duties, three crackpots and an unemployed and unusable CG. And me, Palmer, with what could be the answer.

I had faith in my solution; I liked its math. I had little or no hope that it would be tried — really tried full-scale, and done right. People don't know enough. They don't think really straight. They turn the wrong valves and push the wrong buttons. Palmer should have a thousand hands and the ability to be simultaneously in a thousand places. Then this business of being the wasp-waist in the history of Life and the Lives of the two cultures — this would make more sense.

I shall be bungled out of history, I told myself as we ground along in the nothingness of subspace — the Luanae subspace, given us by Luanae cold-fusion generators. I'm coming, I'm coming, I told the Luanae silently, but I bring the enemy; I bring

bungling; and, my marvels, you'll succumb to stupidity as will I, for it's the last and strongest enemy of them all, against which you and I might not prevail.

I watched Potter picking away at his cuticles, and I silently bore Donato's cough, and I gave my approval to big-eared England because he had so little to say to anybody; I tried to remember what exactly it was that made Nils Blum, the utility-monkey, funny to me when I saw him first; I hoped to recapture it and laugh again, but I never made it. I swore sometimes at Donato's eternal helpfulness and I ignored the skipper, because who wants to talk all the screaming time about ship's business and the business of ships gone by?

... I said nothing where the CG could hear me, and tightened up in painful empathy when I saw one or another of the ship's company floundering and defending and doubting when she repeated his words.

I did nothing about any of these annoyances, except maybe the time I suggested to the skipper that he feed the CG at times other than our mess, so I wouldn't have to witness her purposeless wreckage of even the little things men believe in. He bought that, and it had a double advantage. We not only were spared the sight of her at meals, but she

took to spending her time aft in the "monkey's cage" among the mops and drums of cleaning aerosol and sewer-line scrapers. If Nils Blum objected, then, monkeylike, he could pass it off by scratching and chewing a straw.

... I came through there once and saw them sitting across from each other at Blum's little table, elbows almost touching, not speaking and not looking at each other. And, by the Lord, she was crying, and I must say it did me good. I had a mind to go ask the monkey how he managed it, but I don't involve myself with the unskilled.

We got where we were going and snapped out of the nothing into the something. We took a bearing on the Luanae Galaxy and it was quite a sight, a long irregular sausage of an island galaxy, with its unmistakable signpost, the long regular black swatch of the Barrier's edge where it impinged on, and shut out, the rest of the bodies in the formation. We ducked under again for half an hour and came up again too close to see the swatch, but close enough at last to get the Luanae greeting.

That I can't tell you about.

CAPTAIN Steev piped us all into the messhall in mid-morning, which would have annoyed me if I could think of any-

thing I'd rather be doing — but there just wasn't anything to do, or to want to do, instead. So I shuffled in with the rest of them — Potter, England, Donato. Blum and the CG were back with the mops, I imagine. The captain let us all be seated and stood at the end of the table and knocked on a coffee mug self-consciously.

He said, "We have arrived at our site of operations. We have, among the four of you, four different specialists with, as I understand it, four attacks on the problem of penetrating the Luanae Barrier. I need not," he says, and then went right on as if he needed to anyway, "need not tell you of the vital importance of this task. The entire history of humanity might — not might, *does* — depend on it. If you, or men like you, fail to solve this problem soon, we can expect our entire civilization to explode, like a dying sun, through the internal pressures of its own contracting mass."

He coughed to cover up the floridity of his phrasing, and little Donato happily joined in. I saw one of England's wide flat hands move on the table, to cover the other and hold it down.

"Now, then," said the captain. He bent from the waist and removed his hand from his side pocket. In it was a sleek little remote mike. "This is for the record, gentlemen. You first, Mr. Palmer?"

"Me first what?" I wanted to know.

"Your plan, sir. Your approach, attack, whatever it pleases you to call it. Your projected method of cracking the Barrier."

I looked around at what passed for an audience, coughing, picking, glowering wetly.

I said, "In the first place, my plan has been fully detailed and filed with the proper authorities — men who are in a position to understand my specialty. I believe that copies of these papers are on file with you. I suggest that you look at them and save us both the trouble."

"I'm afraid you don't understand," said the captain, looking flustered. He gestured at the mike. "This is for the record. I've got to have the oral rundown. It's — it's — well, for the record."

"Then I say to the recording, for the record," I barked, right into the mike, "that I am not accustomed to being asked to make speeches before a lay audience, which cannot be expected to understand one word in ten of what I have to say. And I refer the recording and its auditors, whoever they may be, to the files in which my detailed report is presented, for proof not only of my project but of the fact that these assembled, and no doubt those listening to this record, would in all likelihood not know what I

was talking about. Not at all."

I glared up at the skipper. "Does that satisfy the record, Lieutenant?"

"Captain," corrected the captain mildly. "Really."

"A mistake," I allowed. "I never make mistakes accidentally, you understand." I waved at the mike. "Let's let the record stand with that, do you mind?"

"Mr. Potter," said the captain, and I leaned back, pleased with myself.

POTTER removed his finger and immediately replaced it. "Well I don't bind tellig you bine," he said adenoidally. "I'm in field bechanics, as you dough. I have bade certain calculations which indicate the the stresses present in the barrier skin are subject on bobentary distortion under the stress of sball area, high intenstidty focused bagnetie fields of about one hudred billion gauss per square centimeter at focus. That's *billion*," he amended, "not *billion*."

I wondered how the record would make out the difference.

"Very good, Mr. Potter," said the captain. "Unless I am mistaken, you propose to breach the Barrier momentarily with a high-intensity focused magnetic field. Is that correct?"

Potter nodded, a gesture which carried through his right wrist.

"Very well," said the captain.

I blew disgustedly through my nostrils, looking at Potter. His business was as disgusting as his hobby of picking at his cuticles. If I knew as little about my specialty as he did about his, I'd never get trapped into talking about it.

"Mr. Donato?"

"Yes, Captain Steev, yes, sir!"

Donato cried, all blushes and eagerness. "Well, sir, I'm in ballistics. What I propose is a two-part missile aimed to graze the Barrier in such a way that, at the moment of contact, it separates, one segment glancing back outside, the other entering and proceeding inward. This is on the theory that, although the control planetoid reacts instantaneously, its sensors report only one event at one locality at a given moment. I feel I have a fifty-fifty chance, then, of slipping one part through while the other part is being reported grazed and gone. I think a minimum of one hundred thirty shots, fired in four groups and at four slightly different approach angles, would establish whether or not the theory is tenable."

"Tenable?" I gasped. "Why, you — nincompoop!" That's the first time in my entire life I ever called anyone that, but as I looked at him, blushing and grinning and wanting to do right, there just wasn't another applic-

able term. "What makes you think —"

"Mr. England?" said the skipper, much louder than I have ever heard him speak before.

I confess I was startled. Before I could quite recover myself, England answered.

"In the area of mis," he said in a whispery voice which at that point failed him. He swallowed with all his might and then made a weak, flickery smile. "In the field of missiles, my chief concern is, first, a series of tests to determine the exact nature of the internal control pulses in the hunting missiles, the frequency and wave-height of the command pulses in the guided missiles, with a view to jamming or redirecting them. Second, I plan to lob some solids through the Barrier at low velocities in order to study the metallurgical content of the missiles, with a view to the design of sensing-dodging equipment, and possibly some type of repulsion field, designed to force the missiles into a near miss."

"Very succinct," said the captain, and I wondered how he knew what was succinct or not about a specialty. "Now that we've got the swing of this little discussion, perhaps, Mr. Palmer, you would like to reconsider and join it."

"Perhaps I would at that," I said, stopping to think it over.

AFTER all, a little sense ought to be added to this exhibition of maundering incompetence, if only for balance.

"Then if you must know," I said, "the only tenable method of approaching the problem lies in the area of explosive stress. No one but myself seems to have noticed the almost perfectly spherical shape of the Barrier. A sphere in any flexing material is a certain indication of some dynamic tension, a container and the contained in equilibrium, with the analog of some fluid differential like the air inside and outside an inflated balloon. You don't follow me."

"Go on," said the captain, holding his head as if he was listening.

"Why, all it will take is a toroidal mass equipped with a subspace generator and an alternator. If this is placed upon the Barrier margin and caused to vibrate into and out of the subspace state, there will be a portion of the Barrier — that which is surrounded by the toroid — which will be included in the vibration. The effect then is in causing a circular section of the Barrier to be in nonexistence for part of the time. It is my conclusion that this small breach will cause the Barrier to collapse like that toy balloon I mentioned. Q. E. D. Lieutenant." I leaned back.

"Captain," said the captain

tiredly. Then he looked me in the eye and said, "I regret to inform you, Mr. Palmer, that you are completely wrong. Blum!" he bellowed suddenly. "Coffee out here!"

"Hah!" came the monkey's voice. It was as near as he ever let himself get to aye-aye, sir.

He must have had the tray ready before the skipper called, because he came out with it loaded and steaming. He set it down in the middle of the table and retired to a corner. At the side of my eye, I saw the CG sidle out of the "cage" and go to stand silently beside him.

But I wasn't in a mood for anything but this preposterous allegation from the captain. I got to my feet so I could look down at him.

"Did I understand you to say," I ground out, cold as Neptune, "that in *your* opinion *I* am wrong?"

"Quite wrong. The Barrier is a position, an infinite locus, not a material substance, and is therefore not subject to the laws and treatments of matter per se."

I have been known to splutter when I am angry, unless I try not to. I found myself trying very hard not to.

"I have reduced every observation on that surface known to Man," I informed him, "to mathematical symbology, and from it

have written a consecutive sequence of occasions which proves beyond doubt that the surface is as I say and will act as I say. You seem to forget that this is on the record, Admiral, and this may mean you are making a permanent rather than a temporary fool of yourself.”

I sat down, feeling better.

“Captain,” said the captain wearily.

HE turned and took a paper from the stack of folders which I noticed for the first time lay there. He flashed it; at first glance, it looked like a page of figures over which a child superimposed a crude and scratchy picture of a Christmas tree in red.

He said, “Equation number 132, four pi sigma over theta plus the square root of four pi sigma quantity squared.” I could not help noticing that, as he reeled it off, he was waving the paper, not reading from it.

I said, “I recognize the equation. Well?”

“Well nothing,” snapped the captain. “Unwell, I’d call it. Heh.” He slid the sheet over to me. “If you will observe, to be consistent with the preceding series, the integer sigma is not whole but factorial, in view of which an increasing error is introduced wherein — but see for yourself.”

I looked. What resembled a

crude picture of a Christmas tree was the correction, in red, of the symbol he had mentioned, and the scrawled figures of three corrected factors in the next equation and seven in the third following, until the red marks became a whole line.

I said, “Might I ask who has had the effrontery to scribble all over these calculations?”

“Oh, I did,” said the captain. “I thought it might be a good idea to rework the whole series, just in case, and I’m glad I did. You ought to be, too.”

I looked again at the sheet and swallowed sand. A man has to major for a considerable time in some highly creative math to be able to do what had been done here. A thing or two came to my lips, but I would not say them, because they were for my figures and against his, yet it could not be denied that his were right.

To save something out of this, I growled at him, “I think, sir, you owe me an explanation as to why you have chosen publicly to humiliate me.”

“I didn’t humiliate you. Those figures humiliated you, and they’re your figures,” he said, and shrugged.

I glanced at Potter and England. They were grinning broadly. I looked up suddenly and caught the CG’s flat gray stare.

"They're your figures," she murmured, and anyone hearing her would swear she knew for certain that I had copied them from somebody else's work. There was such a flame of insistence burning up in me that they were so my figures that I could barely contain it. But contain it I did; they were not figures I was anxious to claim at the moment.

I was very confused. I slumped down in my chair.

"YOU'RE next, Mr. Potter.

I'm sorry to have to inform you that although, in theory, the Barrier does yield under the stress of a magnetic field such as you describe, it would take a generator somewhat larger than this ship to supply it; the affected area would be just about what you said—a square centimeter; and, finally, it wouldn't be a hole in the Barrier, but what you might call a replacement patch. In other words, the affected area will, when surrounded by the so-called Barrier skin, act precisely like part of that skin in all respects."

Potter put his hobby finger out for inspection and was so distressed he forgot to look at it. "Are . . . are you sure?"

"That's what happened the last seven times it was tried."

Potter made a wordless sound, a sort of moan, or sigh. I did not

feel like grinning at him as he had at me. England did not grin, either, because I think he realized what was coming. He just sat there wondering how it would come.

It came at Donato first. "Mr. Donato—"

"Yes, sir, Cap'n."

"You propose a two-piece missile. You seem to forget, as many another has before you, that the Barrier offers no resistance to penetration and therefore needs no complicated hanky-panky to get something inside. In addition, it's unimportant whether or not an object is sensed by the skin and reported to control, or whether it's picked up a minute or hour later by one of the hunting missiles. You've attacked the whole problem with a view to getting something inside, which isn't a problem, and overlooked what to do inside, which is."

"Oh, Cap'n, I'm sorry," said Donato, stricken. He burst into a sharp series of barking coughs. There were tears in his eyes. "Oh, I'm sorry. I'm sorry."

"Nothing to be sorry about," the captain said. "Got it yet, Mr. England?"

"Whuh? Oh," said the missile expert. "I guess I was off base about the jamming. Suddenly it seems to me that's so obvious, it must have been tried and it doesn't work."

"Right, it doesn't. That's because the frequency and amplitude of the control pulses make like purest noise — they're genuinely random. So trying to jam them is like trying to jam FM with an AM signal. You hit it so seldom, you might as well not try."

"What do you mean, random? You can't control anything with random noise."

The captain thumbed over his shoulder at the Luanae Galaxy. "They can. There's a synchronous generator in the missiles that reproduces the *same random noise*, peak by pulse. Once you do that, modulation's no problem. I don't know *how* they do it. They just do. The Luanae can't explain it; the planetoid developed it."

England put his head down almost to the table. "The same random," he whispered from the very edge of sanity.

AS if anxious to push him the rest of the way, the captain said cheerfully, "Good thinking on that proposal to study the metal content of the missiles. Only there isn't any. They're a hundred per cent dielectric synthetics—God knows exactly what. The planetoid can transmute, you know. What little circuitry the missiles have is laid out in fluid-filled pipes, capillary coils, things like that. There seems to be some

sort of instantaneous transition from solid to liquid and back. The liquid conductors are solid dielectrics again just as soon as they have passed whatever current they're supposed to pass, and that's done in microseconds."

"Radar-transparent," concluded England dolefully.

"For all practical purposes," agreed the captain. "Well, that seems to be that, gentlemen."

"Just you tell me one thing," I said before I could stop myself. "Precisely what in hell are we doing here at all?"

"Precisely what you came to do." The captain picked up his folders. "Blum, I sense that these four gentlemen might be happier without an audience, even us."

"Come on, Virginia."

The captain started out forward and the monkey and the CG headed aft. We all sat where we were.

After a time, England said, "Why didn't he tell me he knew so much about missiles?"

"Did you ask him?" snapped Potter.

That was the question and answer I had been humbly formulating, too. I said, "What did he mean, we are here to do what we came to do?"

"Maybe he wants us to get oriented, is all," said Donato sheepishly. "Get off theory, you know. Like field work."

"If he thinks he's jolting my inspiration, he's crazy," gloomed England. He wiped his wet eyes with the backs of his hands, leaving them still wet. "The jolt, I got all right. The inspiration, I can't find."

"He should have told us before, right at the start. Maybe by now we'd have a whole new set of figures." Donato caught my sharp look and immediately said, "Theories, I mean, friend. I didn't mean to say figures."

Somehow that didn't help.

"Get out of here, Donato," I said.

"Sure, friend, sure," he said and got out like always, smiling. He went into his room and closed the door. We could hear him coughing.

"Like a box you have in your room ten years," Potter was muttering adenoidally, "it all of a sudden goes boing and there's a jumpid-jack." I was going to ask him what he was talking about and then realized he was talking about the captain. I saw his point. Why *hadn't* he called this meeting weeks ago?

"He must like things to look futile," I said. "I'm going back to bed."

"Be, too," said Potter.

I got up. Potter and England stayed where they were. They were going to talk about me.

I just didn't care.

I DREAMED I was walking in a meadow, smelling the sweet fresh odor of snowdrops, when all of a sudden they grew taller and taller, or I grew smaller and smaller, and I saw that instead of stems, the snowdrops were growing on a sequence of equations. I began to read them off, but they got all twisted and jumbled and started to grab at my feet. I fell and grunted and caught hard at the edges of the bunk and was totally awake.

I turned over and looked at the overhead. I felt clear-headed but lethargic. I thought I could still smell the snowdrops.

Then I noticed the whine. It was far away, but persistent. The lights looked funny. They seemed to be flickering slightly, but when you looked straight at them, they were steady. I didn't like it. It made me feel dizzy.

I got up and went out into the corridor. Nobody was around. Then a timid voice said behind me, "Virginia in there?"

I jumped and turned. It was the monkey, cringing against the bulkhead.

"You think I'm *that* bad off?" I answered him in disgust, but as I turned away, he leaned forward and peered into my room anyway.

I went into the messhall and knocked on the decanter and, when it steamed, poured coffee.

Somewhere in the background, I heard a wistful murmur, and then Potter's shocked voice: "In *here*? Monkey, didn't they tell you? I like *girls*." In a moment, he came shuffling in and headed for the coffee. "What time is it, Palmer?"

I shrugged. I looked at the clock, but it didn't seem to make any sense to me.

"God," said Potter, and sniffed noisily. "I feel all . . . disconnected. I got a buzzing in my ears. My eyes — it's sort of flickery."

I looked at him curiously, wondering what it must be like to be a man who so readily relates everything around him to himself. "That isn't your flicker. It's ours. Same with the buzz, though I'd call it a sort of whine."

He looked very relieved. "You hear it, too. What happens here, anyway?"

I drank some coffee and looked at the clock again. "What's the matter with that clock?" I demanded.

Potter craned to look at it. "Can't be. Can't be."

Donato came in, his face scrubbed and shining. "Morning, Palmer. Potter. Well, I wondered which one of us would fall first, and I guess I know now, and who'd a' thunk it." He nodded aft and began coughing.

We looked. The monkey was stepping off one foot and onto

the other in front of England's door.

"You ought to mind your own business, Don."

"Oh, sure," said Donato agreeably. "Guess you're right at that."

Just then, England flung his door open, saw Nils Blum crouching there, and recoiled with an odd high squeak.

Immediately he growled, in his deepest bass, "Don't hang around me, monk," and pushed past the utility man without a backward glance.

WE watched, looking past him as he approached. Blum ducked his head inside England's door, withdrew it, took a step toward us and stopped, his jaw working silently, his big wrinkled head held a little askew.

"But hungry, I'm hungry," England said. "Whatever time is it?"

"Clock's busted." Potter suddenly laughed. We all looked at him. "Well," he said, pointing at England, "it's not him, either."

"You were just saying to Don, he ought to mind his own business," I snapped. I wonder, I thought to myself, if he knows I cut at him because he picks his cuticles?

"What business? What goes?" England demanded.

"By holy creepin' Kramden," said Donato to himself. He looked aft at the miserable figure

there and forward at the closed door to the wardroom and control. "What do you know."

"He is a very surprising man," I said.

"Who? Who? The skipper? What's he done now?" England insisted.

"Virginia seems to be missing," said Donato.

Hearing her name, Blum ran three steps toward us and then stopped in the messhall door, looking timidly at our faces, one by one.

"Well," said Potter, "rank has its privileges."

England blew sharply through his nostrils, expressing a great deal and disposing of the matter. He glanced at the clock. "What'd you say is wrong with it?"

"Nothing's wrong with it."

We turned abruptly and faced the captain. There was an oddness about him, a set to his jaw, a certain hard something in his eye that hadn't been there at all before. Or maybe it had, there at the table this morning. (Was that this morning? What the clock said just made no sense at all.) I looked at the captain and past him, through his open door, through the wardroom with his neat bunk at the side, on forward to the control console and observation blister.

There wasn't anybody up there. From the other doorway, the

utility monkey whispered, "Sir . . . ?"

"Something the matter with the lights, Captain," Donato said.

"It's all right," said the captain shortly. He went to the messhall peeper and switched it on. He dialed for starboard view and stepped back.

We crowded around it. Everything looked about the same out there, the wide vein of jewels straggling across the sky, then the unrelieved black.

"Show you something," said the captain. He moved the controls and the view zoomed in toward the stars. At close to peak magnification, he switched to the fine tuning and got the crosshairs where he wanted them. "Know what that is?"

It was a ball, shiny, golden. It was impossible to say how big. Then I heard England gasp.

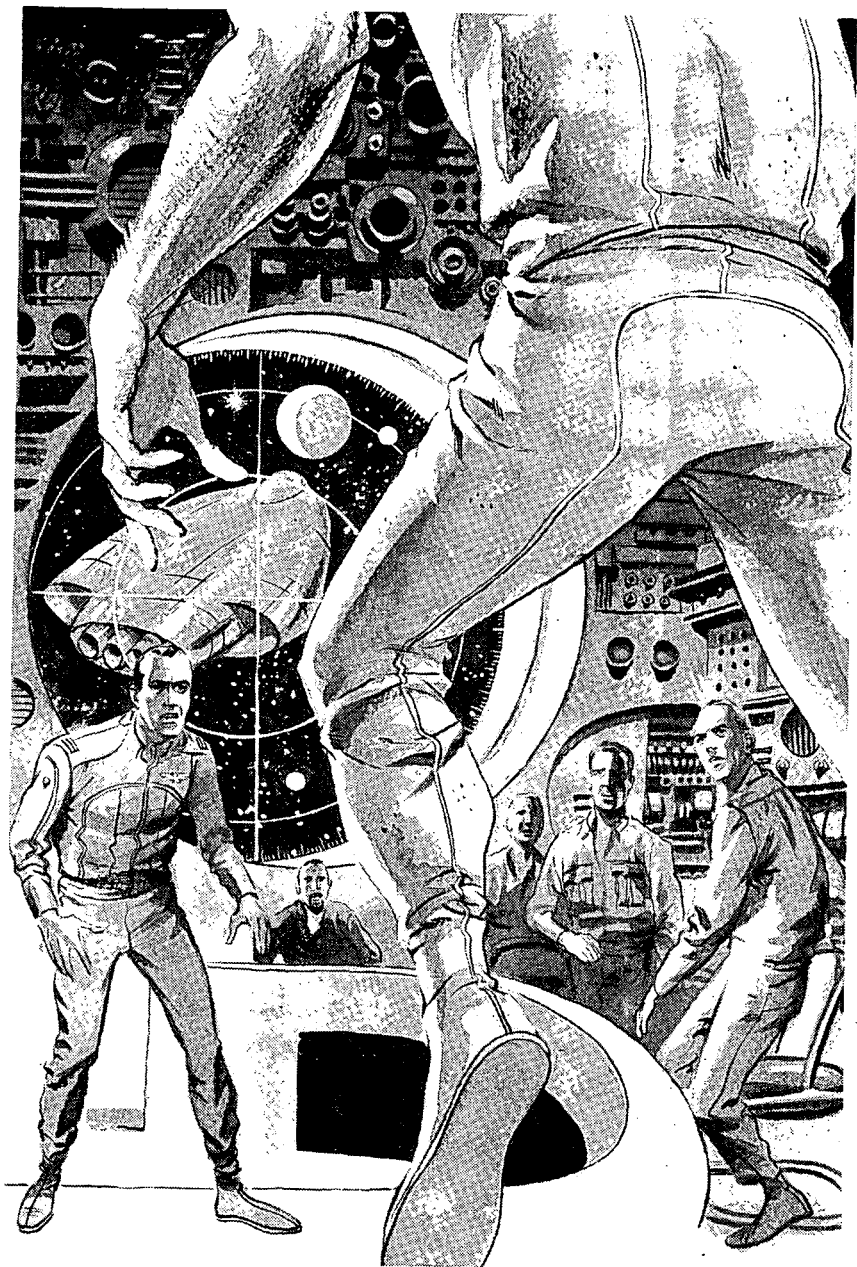
"I've seen that before. Pictures. That's the Barrier Control — the planetoid!"

"So close?" I asked.

"Just because the Barrier is a sphere," said the captain, "everyone assumes the control has to be in the center. Well, it isn't. It's right here at the edge, and heaven help anything that goes in there in a rush, trying to converge on the center!"

"Sir . . ." came the whisper.

"Now look," said the captain,



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winding the zoom handle again. The view backed away from the golden sphere until it was almost lost. Suddenly the screen filled with a flat-topped, streamlined —

"A pod, a ship's pod!" said England.

The captain stepped back a pace and watched the pod with glowing eyes. His hands were pressed tight together and some great suppressed excitement yearned in him to burst free. We looked from him to the peeper.

Under his breath, the captain said, "Git'm! Go git'm!"

"Sir . . ."

"Shut up, monk."

"That pod's inside the Barrier!" somebody said. Me, I think.

"Look! Look there!"

It was like a segment of ivory knitting needle. It was turning slowly end over end. It approached the pod slowly, high, passed close by and drifted out of the picture.

"A missile, a big one."

"My God, what's happened?" gasped Donato.

"The Barrier's down," said the captain, as if he couldn't hold the words inside any longer. "It's down, you see? It's gone and the missiles are all dead."

"Sir, oh, Cap'n . . . I can't find Virginia. Where's Virginia, Cap'n?"

"You're looking at her, Blum. You're looking right at her," said

the captain, his eyes fixed on the screen.

Something hit us, scattered us. For a moment, the messhall was a swirl of grunts and outraged yells, and then the utility monkey had tumbled us aside and was standing in front of the peeper, one hand on each side frame. He seemed a half a head taller, all at once, and his one hairy arm, where it passed close by me, had cords on it I hadn't known about before; his head was a lion's head.

Suddenly he barked, "What'd you do? What'd you do?" He was talking to the captain, who kept looking over Blum's shoulder at the picture and was laughing softly. Then the monkey whirled from the screen, turning as if to turn was to tear something, and he faced the captain and said again, "What'd you do? What'd you do with Virginia?"

THE captain stopped laughing altogether and was a captain duty-talking to a utility monkey. "I gave her her orders and I put her in that pod and sent her on her way. Any objections, mister?"

Blum's eyes began to protrude — honestly, you could see them press outward. His mouth opened slowly, slowly, and a dribble suddenly scored the corner of the mouth and down the side of the chin; the hands came up, clawed,

half-grasping. The nostrils trembled, trembled . . . and then he screamed, so loud, so close to us, it was like a big dazzling light flashing to blind us.

We reared back from that scream, pawing at it.

Next thing was Blum, crouched over and peering ahead as he ran, trying to go somewhere, not knowing how. He ran crazily to the airlock hatch and hit it with his fists, and turned with his back to it and screamed again. "You send me, you hear? You send me with Virginia, you hear me, Cap'n?"

Donato strolled over toward him and, smiling, said the stupidest thing I ever heard squirted into a violent silence: "Aw, come on, monkey, let's all be chums."

Blum screamed again and Donato didn't wait to get turned around. He ran straight backward until he hit me, and I caught him and held him up so he didn't fall.

"Captain, sir," Donato said, squinching his head around as he dangled from my hands, "he won't mind me at all, Captain."

"Get to your quarters, Blum," said the captain from way back in his throat.

"You bring her back or you send me out with her, one," slavered Blum. "You hear me?"

"Get — to — your — quarters."

Blum put up his claws. He be-

gan walking toward the captain, chewing on his own mouth-parts, and his eyes were crazy. The captain bent a little low and put his arms out a little from his sides, and moved very slowly toward Blum. We all got back out of the way.

Blum said, "Now! You hear me?" very softly, and leaped.

The captain stepped aside and hit him. I thought it was on the head, but England told me later it was on the side of the neck, toward the back. The monkey was in midair when the captain hit him, and he went right down on the deck on his face, and he didn't put out his hands to stop himself, and he didn't move.

We all looked at him and then at each other.

"Take him to his quarters," said the captain.

His voice startled me because it wasn't where I thought it was, standing by the sprawled-out monkey. He was already across the room staring into the peeper. For him, the thing was finished; probably his heart wasn't quick any more. He was back with his work, his job. The rest of us had poundings in the side of our necks and we didn't know what to do.

"Go on, go on. Get him out of here. You, Palmer. You're the biggest."

I was going to splutter, but I

held on tight to it and didn't. I said, "See here, I don't have to—"

FROM back in his throat, like before, the captain spoke to me. It was a different thing, being the one he spoke to like that and not watching somebody else get it.

He said, "You see here — you do have to. Whatever I say, you have to, not only you, Palmer, but all four of you clowns. The party's over and the work's done, and from now on out, you mind me and think first of what I want. At all times. Is that clear, mister?"

I said, loud, "Well, I —" and the skipper ripped his eyes away from the scene, almost like Blum, tearing something, and looked at me. So I picked up the monkey's shoulders and dragged him back to his cabin.

It was just like ours, only he didn't have quite so much stuff lying around, or anyway what there was was in square stacks.

I tumbled him into the bunk and closed the door, because that was the only clear place to lean back against, and I leaned on it and tried to get my breath back.

The monkey started to make a scratchy sound in the rear of his throat. I looked down at him. His head was twisted to one side. It was jammed against the pillow. His eyes were open.

"Cut that out, monk." He went right on doing it. "That noise, cut it out, hear me? I said, you hear me, mister?"

That "mister" didn't sound a bit like the skipper's. I was embarrassed.

The monkey's eyes stayed open and I realized he wasn't blinking them; he wasn't seeing out of them. I couldn't stand that breathing noise, so finally I straightened out his head and put the pillow under it. He stopped the noise right away. He closed his eyes.

I still couldn't get my breath. He had blood on his face; maybe that was it.

He didn't open his eyes, but he began to talk, very fast, very soft. It was like being too far away from someone to understand what was being said, and then it was like coming closer . . .

" . . . all she had to do was let herself and she couldn't do it, she couldn't just stop fighting and believe. It was like she'd die if she believed anything. She wanted to. More than anything she wanted to. But it was like someone told her, if you believe in anything, you'll die."

He opened his eyes suddenly and saw me and closed them again.

"Palmer. You Palmer you, you saw it your own self, the time she cried. All that time, all those

weeks, those gray eyes still and hiding whatever it was she had inside her, and me begging her and begging: 'Virginia, oh, Virginia, I don't care what you think of me, I wouldn't want you to love me, Virginia. But only believe me; you can so be loved, you're worth loving, I love you. I do, Virginia; just you believe that once, because it's true, and after that you'll be able to believe other things . . . little ones at first; I'll help you with them, and always tell you the truth.'

"I said, 'Don't love me, Virginia, or think about it at all. I wouldn't know what to do with it if you gave me anything like that.' I said, 'Just trust me is all I want, so you can ask me what's the truth and I'll tell you. But believe I love you; I'm not much, Virginia, so I guess that's not too much to start on. Believe I love you, Virginia, will you just do that?' And she . . ."

HE lay with his eyes open for a long time and I thought he was unconscious again, but then he blinked his eyes and went on.

". . . she cried, all at once, all over, and she said, 'Monkey, monkey, you're tearing me up, can't you see? I want to believe you. I want to believe you more than anything in the world. But I can't, I don't know how, I'm not sup-

posed to, I'm not allowed.' That's what she said. And she cried again and said, 'But I want to believe you, monkey. You just don't know how much I want to believe that. Only . . . nothing is what it looks like, nothing is what it's supposed to be, no one really wants what they say they want. I can't believe them and I can't believe you.'

"She said, 'Suppose I believed you and then the day came when things were all straight and true, and they let you see everything; and suppose I found out then that everything you said wasn't so; found out maybe there was no you at all, monkey . . . what about that? I couldn't stand that. I don't dare believe you, because I want to. If I don't believe anything about anything or anyone, then if things get all true, I can start there and be all right without losing anything.' And she cried some more and then, you, Palmer, you came in, and in a second she was back inside her flat gray eyes. So she didn't believe me and that's why."

I couldn't get my breath. Blum couldn't get his breath. I leaned on the door and he lay on the bed and we panted.

"There was a difference," he whispered, chasing some thought he was having. "She had a way of making you doubt anything you said. I told her my mother

could cook. She said, 'Your mother could cook' in that flat way, and you know, I had to think and wonder if my mother really could. That's what I mean. But I said to her, 'Virginia, you know, I love you,' and she said, 'You love me' in that same way, like who ever heard of such a thing?

"But what I'm trying to say, that didn't touch me, when she did that when I said I love you. I looked into how I felt and I felt the same no matter what she said. So about that, there was a difference. That's how it was all right to say, 'Believe me, believe me about that.' I knew that things could change. I knew that almost anything I told her could be wrong, some way. But not that. She could trust me with that. And she wanted to. At least I got that."

I leaned against the door, feeling embarrassed, and then I could turn it to anger.

I said, "You're stupid, monkey, you know? You're crew, she's CG. She couldn't stop you. Why didn't you just go right ahead? That's what she's aboard for."

BUT that didn't make him angry. He looked up at the ceiling and said quietly, "Yeah, she said that, too. She said, 'You don't know what you want, monkey,' she said. She said, 'This is

what you want. So go ahead, only stop talking about it.' I said no. I said there could be a time—I hadn't thought about it yet; I wanted something else first—I wanted her to believe me. She said I was crazy and to keep away from her then, but after, you saw it, Palmer. After, she said she wanted to believe me, more than anything."

He was quiet at last, breathing easily, thinking about something to smile at. I spoke to him, but he didn't answer. He was asleep, I guess. I opened the door quietly and closed it on him and went back to the messhall.

They were all there by the peeper, watching.

I said, "He's asleep now, but there's going to be particular hell to pay when he wakes up and really understands she isn't here."

The skipper looked away from the screen at me and then back again. He wouldn't spit on the messhall deck, but he might as well, the way his face looked. He couldn't worry about that monkey.

I asked Potter, "What goes?"

Potter said, "Whether to get mad or glad, I don't know. You specialist, Palmer—you're a clown. And England. Donato. Me, too. Virginia, she was the specialist all along. She was the one this whole thing is for. How much farther?" he called out.

"A few meters," said Donato, absorbed.

I looked at the peeper. The ship's pod, that long false underbelly we'd hauled all the way from the Earth Worlds, it was drifting in close to that golden ball. That ball, I could see now, it was big as a supership if you could roll a supership into a ball. It was big as some moons. There were pale sticks drifting all over, dozens of them.

"Dead missiles, you see?" said Potter, watching the screen. "All dead. Every single cold-fusion power plant and explosive in a thousand kilometers is dead. Maybe more. Ours, too."

"Ours?"

"That hum, that flicker. We're not tapping a cold-fusion plant now, Palmer. We're taking off a steam turbine, water superheated by a parabolic mirror from that sun yonder."

"Steam turbine take us home?"

"Stupid!"

Donato chimed in. It was weird. Everybody talking whispery, as if loud noises would spoil something in the peeper. Nobody looked at anybody to talk, just kept watching the peeper, some of them moving the mouth all to one side to talk to one, to the other side to talk to someone else.

Donato said, "Little turbine wouldn't move this can half a length."

"It's all right," England said. "What she's doing, she's going in there to leech on to that planetoid. First there's a catalyst that will crumble a pit in the armor, because a bomb'll hardly scratch it. Then, when the skin's thin enough, she's got a bomb there. It goes off and no more Barrier."

"He said the Barrier's gone."

"Sure. She damped it. She's holding it dead. If she let go, bango, back comes the Barrier and all those missiles come to life."

"What's this damped, holding it dead, letting go—what is all this?" I was getting impatient.

THE skipper saw fit to say something. "We call it the D-field because—" he was quiet a long time—"because that way it sounds like something we know about, can know about."

He flicked a quick glance at all of us, as if somebody was going to laugh. Nobody was going to laugh.

"What it is," said the skipper, hating to say it, "it's doubt. A field of doubt. I mean—well, doubt, that's all."

Nobody said anything. Doubt, all right. But doubt has a way of getting invisible after a captain makes all those loud captain noises like he did.

I imagine he knew that. None of it was our business, not any

-more, but he didn't want to be doubted, not even by us specialists—us clowns.

He said, "What we did; we found Virginia trying to commit suicide. She had this doubt thing on her back, naturally. She didn't want to go on, because she had nothing she could believe in. Or just plain believe. Well, we took her and gave her some treatments . . . I'm a skipper, I don't know the details . . . Anyway, she came out of it with what she had when she went in, but more so. Much more. You all felt it—don't tell me you didn't. She could make a man doubt his own name."

I said, "Yeah . . ." only realizing when I heard it that I'd said it aloud.

Captain Steev watched the screen for a while and said under his breath, "That's right . . . atta girl . . ." and then to us, "It was a tricky problem. Given that a concentrated disbelief in things could have an effect like this—just for the sake of argument—if you want someone to stop a big power plant from a great distance with this faculty, how do you transport that someone in a ship powered with the same type of plant?"

"If it was a machine now," said England, "I'd say assemble it only when you wanted to use it."

"That's the way they did with

the first fission bombs," said Donato knowledgeably. "They didn't put it together until it was due to blow. They blew it by putting it together. But doing that with a person, now . . ."

"You have the idea. You can't disbelieve in anything until you know what it is, or at least what people think it is. I can't believe or disbelieve that *pyoop* is the word for godmother in High Martian. I just don't know. Well, Virginia didn't know one way or another about a cold-fusion plant, though I swear ours gasped a time or two on the way out. She has a large amount of control over it."

ENGLAND said with sudden impatience, "Excuse me, Captain, but the only reason I can stand here talking about this is I see it working."

"Let me tell you, then. The cold-fusion plant is a Luanae idea. It's real simple-minded. Anybody can understand it once it's explained to them. Everything was set up when we came out here, including you four. The crackpot experts who knew more than people who've been in this all their lives. But as far as she was concerned, you were experts right up to the time I set you up and knocked you down—factorial sigma and the square-centimeter magnetic field, hah!

"She doubted you were experts when she first saw you, just because she doubted everything. When she saw what I did to you, she felt she was right to doubt. She reached a . . . sort of peak of disbelief. My God, didn't you feel it? . . . Look there, she's leeches down. Now the catalyst will be working on the armor. It won't be long now."

"I still don't see how just plain disbelief can shut down power plants," I argued.

"Not power plants. Just cold-fusion plants. Well, let me tell you and you'll understand. I put a shot of sleep-gas in your ventilators and got you all out of the way. Then —"

"SNOWDROPS," I said, remembering.

"Then I put her in the pod and told her to ride it, that's all. Except I . . . armed her . . . like you arm a bomb, you see? I told her what a cold-fusion plant is. She didn't care one way or the other, mind, but she listened while I explained it to her, all the parts. Then I gave her a paper and told her this is exactly what happens. I told her to read it as soon as the red light on the panel went on, which would be when she was clear of the ship."

"Read what?" somebody asked, after it got too quiet.

It was a long wait, watching

that pod leeches to the planetoid and nothing happening but white sticks drifting, rocks, bits of stuff the planetoid had pulled in and hadn't been able to eat . . .

"Read what?" the captain finally repeated. "The cold-fusion formula, that's all. Written out in words of one cylinder. When Hydrogen One and Hydrogen Two are in the presence of mu mesons, they fuse into Helium Three with an energy yield in electron volts of 5.4 times ten to the fifth power. That's what was on the paper. She knew, piece by piece, what the parts were — what mu mesons and Helium Three are and what is meant by that many electron volts. She had all that buried deep in her before we left the Earth Worlds. She'd had no occasion to put them together, that's all.

"And here I come saying (on paper), 'This gadget does exactly such and such.' Well, she just out and out doesn't believe it. That would make no never mind to a turbine or a power drill, but when you get into subatomic particles, clouds of them, involved in a catalysis — untouched in the long run, but I imagine pretty edgy . . . and you slam them with this thing, whatever it is she has . . ."

Suddenly impatient, he rapped, "Who am I trying to convince? It works, you see?"

I SAID, "Get off my foot, monk," and went on watching the screen. I don't think anyone else noticed the utility man. I hardly did myself.

"Hey," Donato said suddenly, "our generators are out, right? How do we get out of here?"

"When the bomb blows — no more D-field. Simple."

England barked, just as suddenly, "And what about all those missiles with the damper gone? They shoot off in every —"

"Dry up, clown," said the skipper. "And keep your panic to yourself. Every one of those missiles is triggered from one place and one place only — that planetoid. How do you think they were kept inside the Barrier and off the Luanae Earths all this time? Who cares if they get their power and explosives again? There'll be nobody in the driver's seat any more. Now shut up. It ought to blow pretty quick."

"Blow how? If it's right in the middle of the — uh — damping field—"

"I said shut up! That isn't a cold-fusion bomb. It's a hairy old thermonuclear that doesn't give a damn what anybody believes."

"What is it? What's going to happen? What's out there? Where —"

"Go on back to bed, monk," I said out of the side of my mouth, watching the screen. I meant it

to sound kind — he'd had a bad time — but it didn't come out kind. I guess I'll never get used to talking to them.

It let go.

Oh, my God.

Captain Steev was wrong. There was triggering, somewhere, in some part of that split-second of hell. Because all the missiles went, too. They didn't fly; they didn't hunt. The warheads went.

It took a long time for our eyes to come back. The peeper screen was gone for good.

The turbine moaned down and down the scale and stopped. The lights stopped that annoying side-of-the-eye flicker.

"We got to go out and get Virginia," was the first complete sentence anyone said.

Somebody laughed. Not a funny laugh.

England's voice was harsh. "Don't be stupider'n you have to be, monkey. Don't you see we're back on our cold-fusion plant?"

"That makes no difference to him," I told England. "He wasn't around when the skipper explained."

"Who wasn't around?" barked the captain. "Damm it. Blum, nobody told you to leave your quarters. You're confined, you understand that? You, Palmer, can't I trust you to —"

"Wait!" The scream was almost

more than a man could take. It was almost like that flare of light.

THE monkey stood there in the middle of the messhall, going mad again. "Wait, wait, wait! I got to know. You all know. I don't. What *happened*?"

"Come on, Blum," I said quickly. I was afraid of him, but I think I was more afraid of the captain. He had a look on his face I never want to see any more.

He brought the face close to Blum and said, "You want to know, well, okay, and I don't see why I should waste time or pity on a goddam monkey. That bomb knocked off the planetoid and the Barrier, which is what we came here for, and it knocked off your Virginia because that's what she was sent out for. Okay?"

"What you want to kill her for?" Blum whispered.

"You wouldn't happen to know any other way to bring back our power plant, now would you?" snarled the captain.

I tried to explain to the utility monkey. "She didn't believe the plant could work, Blum. So it couldn't work."

"I could make her believe. I could. I could."

We looked at him, the big tilted head, the trembling nostrils. He wasn't going to get crazy mad, after all. He was going into something else. It scared me more

than his going crazy mad would.

He said, "It was you, wasn't it, fixed it so she wouldn't believe anything?"

"She had a head start," said the skipper, and turned his back. "Come on, Potter. Donato. You're crew now, like it or not. Let's get this can the hell home. We got news for the people."

"I never thought human beings could be like that," Blum said very quietly. "I never believed they could."

"Get to bed, monk," I said. And before I could stop myself, I begged him. "Please. Please, Blum — get out of his way."

He looked up into my face for a long time. Suddenly he said, "All right, Palmer." Then he just left.

I felt a lot better. Does you good to know you can handle people.

"Bunk in, men. We jump in five minutes." The captain went forward to check his controls.

"Well, don't stand there!" I barked at them. "Bunk in, men!"

'You know what, Palmer, you're a jerk," Donato told me. Then we all bunked down.

Four minutes went by. Five. I heard the whir of machinery.

The lights went out. The whir was a moan, then a whine. The light came on dim, then bright, and flickering at the edges of the eyes.

I DIDN'T figure it was any of my business, so I just lay there and waited. Pretty soon the captain came back. He leaned against my cabin door and looked at me.

"Something the matter?" I wanted to know, trying to sound intelligent.

"Power plant's out, is all."

"Oh," I said. "Uh—what's wrong with it?"

He heaved a slow sigh. "Nothing. Only it doesn't work."

"I guess I better get up," I said.

"Why?" he asked me, and went away.

I got up anyway and went and told Donato and Potter and England. They stayed where they were. They didn't like this quiet skipper with the quiet voice and no arguments.

"You know, if he can't fix it, we don't go anywhere. The Luanae have no ships and we can't reach any of their planets," England told me. I'd as soon he hadn't.

I went to see Blum, for something to do.

He had his eyes open without seeing anything and he was mumbling to himself. I tried to hear.

"... a little kid, they say you have the same chance as everybody else, you believe them. 'I'll hold your bag,' they say, 'while you get the tickets. Don't worry,

I'll be here when you get back,' and you believe them . . . 'Got a great job for you, son. Light work, big tips —'"

"Monkey," I said.

He looked up at me. "You know what, Palmer? She said if you don't believe anything at all, you lose nothing when it all comes straight at last. It's all come straight for me now, Virginia. I can be safe now, Virginia, not believing. They can't take anything away from you that way. You're so right."

He went on talking like that for a long time. I left and walked forward and found the captain. He was in the control room jiggling a handle back and forth and not looking at it.

I said, "Captain, that D-field the girl had — now could a person fall into that by himself — I mean without those Earth Worlds doctors and all?"

"You sure you have to come bother me about it?" he asked in a whisper, not looking at me.

I backed way off and said, "I think I do. I think the monkey's got a case of the same."

"Now that's crazy! He'd have to have a real shock to get into a state like that. The monkey's okay. Beat it."

"He's mumbling how he doesn't believe in anything."

So the captain went aft with me. He watched the utility mon-

key for a time and then said, "Well, we'll fix it so he doesn't believe one way or another," and hit the man in the bed on the jaw so he slid up and banged his head on the inboard bulkhead.

I could hear the monkey breathing and I could hear the steam turbine, on and on.

I said, "I guess being unconscious doesn't make any difference to what you believe."

"You should know," said the captain. "All right, Palmer, pick him up and bring him along."

"Where?"

"Shut up."

HE walked out. I guessed I'd better go along with him. I heaved and grunted the monkey up over my shoulder. I almost fell down with him. The captain was waiting in the corridor. He started to walk when I came out, so I followed him. We went down to pod level and forward to the airlock. Captain Steev began to undo the inner lock.

"What you going to do?" I asked him.

"Shut up," said the captain.

"You fixing to kill this monkey?"

"You want to get home?"

"I don't know," I said, and thought about it.

The captain flung back the inner door and stood up. He said, "What's your trouble, Palmer?"

I said, "I don't think I'm going to let you do this, Captain. There's some other way. You don't have to kill a little utility man."

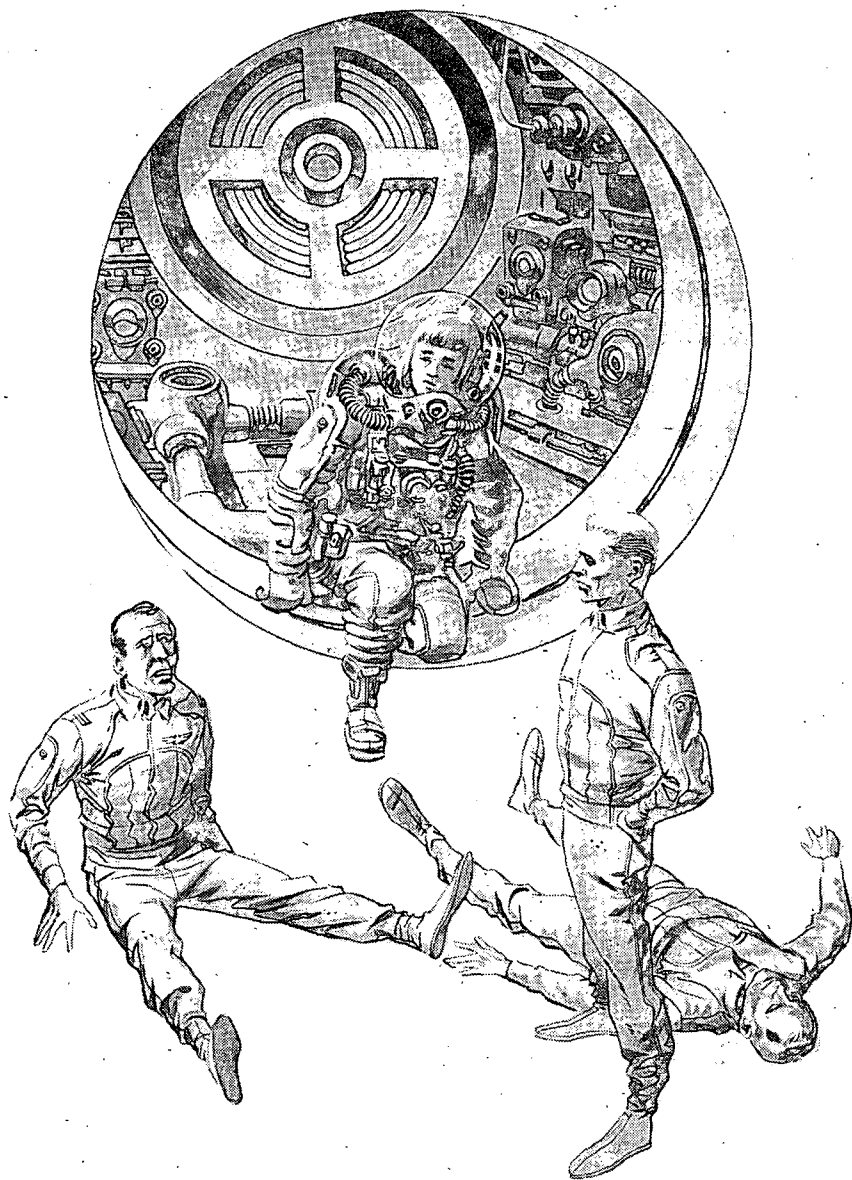
"Put him in, Palmer."

I stood there with the limp monkey on my shoulder and glared at the captain while he glared back. I don't know how that might have ended—I do, only I'm ashamed to say it—but there was a noise and a voice, and somebody stood up out of the lock.

"Well, it's about time," Virginia complained. "You had the inner lock dogged and I've been lying in there for an hour. I guess I went to sleep. Who's that? What's the matter with Nils?"

The captain looked like a man with a cup of flour in the face. "*Who told you to leave the pod?*"

"The Luanae," she said calmly. "Inside my head, like. It was funny. Told me how to get into the flight-suit and how to get the gas bottles and strap them all together and use them to jet clear of the pod and that big gold thing. I got a long way away and then they told me to get back of a big piece of rock floating there. There was a lot of light. They told me when to go again, after the pieces stopped flying by. It was easier then. There's a jet unit built right into the suit, did you know that? The Luanae told



me how I was supposed to use it."

I got my jaw working and said, "What made you think you could make it go?"

"Well, it's the same kind of unit that brought us here, isn't it? You can't help believing your own eyes."

AT last the captain moved. Before he could say a word, I slung the monkey down to the deck and pushed him. I bet the captain has been hit in his life, and maybe kicked, but I don't believe anyone just up and pushed him in the chest. He sat right down like a child with his legs spraddled out, looking up at me.

"Now you just stay there and shut up yourself," I told him. "You're always doing everything with these people the wrong way."

Virginia was kneeling beside the monkey. "What is it? What happened to him?"

I said, "He got a bump, that's all. Listen, if you don't mind me asking, do you believe he loves you?"

"Oh, yes!" she said immediately.

"Then I tell you what. You stay right here with him and rock him back and forth a little till his eyes open, hear? Then tell him that — tell him you believe him. That's all."

The captain scrambled to his feet and opened his mouth to bellow. I bellowed first. I don't know where it came from, but I believed I could do it, and it was a time to believe things.

"You! You get up forward and check your controls. This can's going to take off like a scalded eel if you've left the controls open, and I don't want these folks shaken up. Go on, quick! You're the only one here who knows how to do that. I'm the only one who knows how to do this other. Right? Right!" I said and pushed him.

He growled at me, but he went right up the ladder.

I hunkered down beside those two people and looked them over. I felt fine, very fine.

I said, "Virginia, you know what this is? This is the day everything all comes out straight. Right? Right."

"You're a funny sort of man, Mr. Palmer."

"A clown, ma'am."

I made a face at her and went up the ladder. About the time I reached the top, the ship began to move. I fell right back down again, but they didn't think it was funny. They didn't even seem to see me.

I climbed back up quietly and went back to my cabin.

— THEODORE STURGEON

(Continued from page 6)

are fairly indicative of the growing ability of the ears tested . . .”

Hybridization produced more of a revolution than I had suspected — “approximately 10,000 different varieties of corn have been developed!”

Seedsmen have a natural deal. Their customers have to keep coming back because the cross-breeds that produce hybrids must be repeated every year. But the product pays off very heavily: In 1938, fifteen million acres planted with hybrid seed yielded 120 million more bushels than they had with open-pollinated seed. The increase must be even higher now, with better hybrid varieties.

Incredibly, the rocky soil of New England yields far more corn per acre than the Corn Belt's rich loam.

Corn has a good many insect and fungus enemies; picture this vivid communique from the silent battlefield: “Poison bran baits are widely and successfully used for the control of grasshoppers, armyworms and certain species of cutworms. Injury by the chinch bug can be much reduced by dust-mulch or furrow barriers of various kinds to prevent migration of the bugs on foot from adjacent ripening or dying small grains. The best type of barrier includes the use of a thin

line of coal-tar creosote applied on a low ridge to repel the bugs and direct them into postholes dug every 20 or 30 feet along the line.”

Here's a dandy game to be played on long, tiresome car rides: “To measure silage in a circular silo . . . square the diameter of the silo, multiply by .7854 and the depth of the silage . . . if this is divided by 40, the number of pounds per cubic foot, one may determine the number of tons of silage.”

It is impossible to discuss corn without bringing in Henry A. Wallace, Roosevelt's Secretary of Agriculture. He was the first independent breeder of hybrid seed corn and is among the biggest seedsmen. He also originated the first corn husking contest, in 1922. Corn is Wallace and Wallace is corn.

Not a word in the *Encyclopedia*, though, about whether corn always grows odd numbers of rows. A phone call to a seed company, which I should have made in the first place, gave the answer. Seed corn is rated in even rows, from 8 to 20. I can't imagine a cob with 20 rows; it must be as thick as a wrestler's neck.

I wonder if the anti-science fiction magazine also got clobbered by readers. Probably, but you don't see *them* retracting.

— H. L. GOLD

Doat Age

By JOHN BOLAND

*Maybe it wasn't Gil's fault
—but why did he have to go
make an irresistible object?*

PEACE and quiet, very little work, lots to eat and drink — that's what I like in life, and I had them all at Hornwell. Yes, it's a pity about the job, but I'm not blaming anyone but myself. They've all begged me to stay, but I couldn't see any future in it.

My name is Broadbrace — Doctor William Broadbrace — and when I was offered the job of

senior medical man at Hornwell Research Foundation, to look after the health and well-being of the 547 men and women scientists who worked there, I took it. There was only one reason I didn't jump at the chance — I'm not built for jumping.

It didn't take long to settle into a schedule. I had six assistants, who did the routine work, while I kept an eye on

Illustrated by BOWMAN

things in general. The work of the Foundation went on with maximum speed and efficiency, and I was happy. I made two friends. One was the chief of the Foundation, Gilbert Smith; and the other was Harry Summerton, who was in charge of one of the projects.

The three of us used to spend a lot of evenings together. We were all bachelors, so we had plenty of time to do as we pleased, and, as there was a large surplus of unmarried women at the Foundation, we three men kept together in a sort of mutual protection society.

Harry was a good bit older than either Gil or me and he was inclined to be a bit forceful in his views. He had views, Harry did, on everything, whether he knew anything about the subject or not. But Gilbert was quite different.

Six foot eight, thin, with a narrow face and thick glasses, Gilbert is a scientific wizard — there's no other word for him. The only trouble is that he's got a terribly sensitive nature to the sufferings of living creatures, so much so that he's been known to free a trapped fly from a spider's web, and then spend a sleepless night wondering whether the spider had died of starvation as a result of his interference. The least little thing can upset Gil,

and when he's upset, the work of the Foundation suffers.

Gil had been an orphan from babyhood; he'd been brought up by two maiden aunts, of whom he was very fond. The old girls had sold their communal home after he'd gone — apparently there'd been a row over pets. Aunt Maggie owned a dog; Aunt Clara owned a cat; the two animals had fought, and that was that. The two old ladies had each bought a cottage, miles apart, and Gilbert used to spend one free day every month with Aunt Maggie, and another free day with Aunt Clara.

THE phone in my bedroom rang and woke me up one night. It was Gil. He was in a dreadful state. He'd just come back from seeing his Aunt Clara. The old lady's cat had just died and she was grieving deeply about it and this upset Gil. I had a difficult time getting him over the shock, but a fortnight later he went to pieces. He'd just called to see his Aunt Maggie at the very moment that her precious dog had died.

Well, I had an awful time with him. He couldn't sleep at night, worrying about his aunts; and his work, and the work of the Foundation, began to slide badly. I tried reasoning with him, but it only made him more depressed.

"Good heavens, Gil!" I said. "Try to keep a sense of proportion. Cats and dogs can't live forever. If people want pets that'll outlive 'em, then I suggest they should go in for elephants or parrots or donkeys."

Harry worked on him as well, but it made no difference.

"You can't replace cats or dogs," Gil mumbled dispiritedly. "They're special."

It was then that I made my mistake. "All right, then," I said. "Why don't you invent something to do just that? Something that'll take the place of cats and dogs — something that could live for years and years."

Gil's face smoothed immediately, and for the first time in days, he began to look cheerful. "By the atoms, Doc, that's not a bad idea! Not a bad idea at all!" A smile lit his narrow face. "Sure, why not? Build a — a special kind of pet."

Harry was shocked. "Now look here, Gil. You can't do that. It wouldn't be right. Machines, yes. The more of those we can invent, the better. But to make a pet, a *living* pet — why, it's against policy, not to mention nature. And I'm surprised at you, Doc, for even mentioning it."

This, coming from Harry, was particularly good. His job at Hornwell is to design machines that are capable of independent

thought; able to reproduce themselves, locating and mining their own raw materials, refining and machining, and replacing any part that gets worn out.

But Gil paid little heed to Harry. He was full of enthusiasm, bubbling over like a retort or whatever they use nowadays.

NEXT day, the Foundation was back on full production. Gil was at work again and everyone was happy. During the next few months, I didn't see much of either Gil or Harry. In a way, I missed the times the three of us used to spend together, but it meant I could spend the evenings in my bungalow without being disturbed, so there were compensations.

Then, one evening, Gil called me on the phone and asked me to come across to his bungalow. When I got there, he was waiting outside on the porch, and he almost dragged me inside.

"There!" he said triumphantly. "What do you think of that!"

That was a ball of fur, about fifteen inches in diameter, resting on the middle of the carpet.

"What's it supposed to be?" I asked cautiously. You meet up with all sorts of queer things at Hornwell.

"It's a doat."

"A what?"

"A doat. D-O-A-T. 'Do' for

dog,' 'at' for 'cat' — it combines their best qualities."

"Well, I'm glad you told me," I said. "I'd never have guessed."

In appearance, it was just how a medicine ball would look if you covered it with fur — thick, shiny, dark brown fur, about two inches long.

"Very interesting, Gil," I said. "But what's a doat for?"

"It's a pet — a remarkably hardy pet that will live as long as a human being. Longer, in fact."

I looked at the thing doubtfully. I couldn't see it taking the place of a real pet and I said so.

"That's because you haven't seen anything yet," he responded, and proceeded to give a demonstration. "Here, Rover," he called, snapping his fingers. "Heel, boy!"

The doat changed shape, elongating itself, then moved toward him, its fur acting the way a tank-track does, so that it moved smoothly. When it got to within a few inches of his feet, it stopped, changed back into a sphere and barked.

It worked on a system of photo-electric cells, Gil explained, plus sensitivity to smells and sounds, and was triggered off by the vibrations in his voice. It listened to what he said; then an internal computer sorted out the appropriate sounds and interpreted them into action. A doat was strictly a one-man object.

All necessary data had, of course, been pre-fed into it by means of electrical impulses.

The doat was a clever toy, but nothing more.

"No, Gil," I said. "That thing will never become popular — not as a pet."

The doat made a slight movement in my direction and growled. Gil laughed. "He can smell you don't like him."

But I wasn't to be put off. "They'd get too dirty, for one thing. All that fur, and rolling in mud and stuff —"

Of course, I should have known better than to think Gil would slip up on an elementary point-like that. There was an electronic-magnetic dirt and moisture-repulsion unit built in. No matter what sort of dirt and water the doat rolled in, it always came out immaculately clean and dry.

"Feel it," Gil said. "Isn't it nice to the touch?"

I BENT down and put my hand cautiously on the dark brown fur, then stroked it softly. Gil was right. It was pleasant to touch, warm, and soft as satin. The doat began to purr. It was a delicious sensation.

"All right," I said at last. "So I'm wrong. Maybe you have got something."

"You bet I have. My aunts will love 'em! I've only made this one

so far, but when I make another . . ." He snapped his fingers again. "Come on, Rover. Let's go show you to your Uncle Harry."

Harry was still at work in B Block Laboratory and he didn't take kindly to having his work interrupted, but he couldn't say much; after all, Gil is the chief. The doat's tricks made no impression on him.

Just as Gil had finished putting the doat through his tricks, a mouse scuttled across the floor of the laboratory. Before you could blink, the doat spun after the mouse at a hell of a speed, catching up with the tiny creature and rolling on top of it. When we got up to the doat, there was no trace of the mouse.

"He's assimilated it," Gil explained. Apparently the doat rolled on top of its food and absorbed it — a much better system than the ordinary digestive arrangements, according to Gil.

That was the only time Harry showed any enthusiasm, for we have a lot of trouble with mice at Hornwell.

Naturally, it didn't take long for news of the new type of pet to spread, and Gil gave the first doat the run of the Foundation until he could make two more for his aunts. He'd become rather fond of the first one and had decided to keep it for himself. And what a fuss women made of it! You'd

have thought it was a baby, the way they gurgled over it.

It was at this time that we had the robbery. Harry had all his plans and filed reports stolen from B Block Laboratory. The security police brought in Scotland Yard and everyone's life was made a misery by the ceaseless questioning that went on. It was all a waste, because the plans were never discovered. The thief or spy — or whatever he was — must have walked in in broad daylight, lifted the papers and walked out of the place again, because they'd been on Harry's desk one minute, and the next they'd disappeared.

Chief Detective Inspector Railton of Scotland Yard was in charge of the investigations. He questioned me a dozen times and he was quite offhand, too, when I complained that I was used to having a little respect shown to me.

I knew at once that he'd not solve the mystery, for he seemed to spend five minutes asking questions, and then to spend an hour playing with the doat.

At last he admitted failure, but before he left Hornwell, he had a last interview with Gil, and he persuaded Gil to make some more doats.

"With those doats, sir, patrolling the place," the detective said,

"why, there wouldn't be even a mouse as could get past 'em! Have the place guarded by watchdoats and you'd be secure as the Bank of England!"

After giving the matter a bit of thought, Gil agreed. There was an extra fence built round the Foundation and six doats were set to patrol the lane between the fences. Everyone slept soundly again, except for one time when there was a doat fight.

From the noise, you'd have thought the end of the world was happening, but when we got there, instead of finding either of them torn to pieces, there wasn't even so much as a torn-out hair to be seen. The two contrived creatures had been dragged apart and were standing growling at each other.

The fight upset Gil. "I don't get it, Doc," he said to me. "I just don't get it."

We were still standing in the open in our pajamas and bathrobes. Everyone else had gone to bed and the guards and the doats had resumed their interrupted patrol.

"I built the doats so they'd respond only to certain impulses," Gil went on. "They've got sufficient information tape-fed into them to do as they are told and to react under certain conditions. But I can't for the life of me see how it's possible for them to react

in any way against each other."

"Probably a trick of the light," I said, anxious to get back to bed. "One of them mistook the other for an intruder or something."

There must have been an official report filed on the doat fight, because we had the Scotland Yard man down again, checking whether any attempt had been made to effect entrance into the place. There hadn't, of course, but the detective had a bright idea. Was it possible for a doat to corner a man?

One of the younger men, being a good runner, volunteered for the experiment. The detective briefed him and the young man set off. He ran about all over the place, pretending to peer into buildings, opening doors and windows, and then concealing himself. At that point, Gil, acting on the detective's instructions, set his doat, Rover, on the young man's trail.

For a few seconds, the doat rolled in circles; then it was off. It followed the trail of the "criminal" without a mistake and at last flushed the youngster from the shed where he'd been hiding.

The young man made a run for it, but the doat rolled after him and kept cutting diagonally between his feet, eventually tripping him and bringing him to the ground. Then the doat stood guard a few feet away, growling.



It was a magnificent demonstration. I estimated that the doat moved at a speed of seventy to eighty miles an hour on the straightaway and had incredibly fast braking action.

THE detective went back to Gil's bungalow and watched the elongated scientist feed his pet. Feeding a doat was simple. You placed a butcher's bag of meat and fish scraps on a plate, not even bothering to empty the bag, with a saucer of milk beside it. The doat then rolled onto the bag of food, settling over it rather like a broody hen sitting down on a clutch of eggs, and when it rolled off the plate, there was no sign of fish, meat or paper bag. The milk disappeared in the same manner.

After Rover had been fed, it began to purr. The detective was most impressed.

"You know, sir," he said to Gil, "if we could supply our men in the force with a doat apiece — why, I believe we'd cut crime by fifty per cent."

Gil promised to think about it and, for a few days, we had peace. Everything in the Foundation was running beautifully. Rover was still more of a pet than before the demonstration and even Harry got to like him, although he'd often chased the doat out of B Block Laboratory, where it

used to go to be patted and fussed over by some of the young women who worked in there. Ever since the first day when Gil had taken him there, Rover seemed to have a fondness for B Block.

But then he started mixing with the watchdoats and he spent a lot of time in their company, even to the extent of going on patrol once or twice.

But the change didn't seem to suit Rover. Every day its coat became duller, its movements slower, until it could hardly roll across the floor and onto a plate of food. Not that its appetite was impaired. Actually, it was eating even more than before, but in a listless kind of way.

Gil was becoming increasingly unhappy about it, but I tried to tell him that it was merely a passing phase. "You'll see," I said. "In a week, Rover will be back to normal."

But Rover wasn't. Instead, two of the watchdoats came down with the same ailment. Gil was starting to lose sleep again, and so I said to him: "Good heavens, man! It's bad enough when you lose sleep over the sufferings of human beings, but over doats — well!" Finally I had to be firm with him. "Take a day off," I ordered, "and go take a trip to visit one of your aunts."

He did, but when he didn't re-

turn, to say that there was a panic is to put it mildly. Security checked on his movements and the first jolt we got was when they reported that the cottage, where he had gone to see his aunt, was empty and for sale.

And then they checked up on the other aunt and found that she'd gone, too. We were just getting to the point of calling in the police and military intelligence agents when Gil's small sports car hove in sight and steamed to a stop at the main gate.

DESPITE my bulk, I was the first one to get to him. "Gil! You shouldn't do this to me, man! Where have you been? Are you all right?"

He climbed out of the car, unfolding himself section by section. Then he caught sight of the crowd of people all staring at him from behind the fences.

"Is something wrong?" he asked.

"We all thought you'd been kidnapped," I scolded him.

Well, it all turned out to have been a stupid mistake. His aunts had made up their quarrel when he'd presented them with the two doats, and they'd bought a larger house and gone to live in it together. Gil had simply forgotten to notify us of the change of address.

"That's a fine thing," I said. "Keeping me out of my bed all night, worrying myself to a shadow, and all because you forgot to give us the change of address."

But he wasn't concerned with my feelings. He'd been out all night because one of the doats — the one he'd given to Aunt Clara — was going off-color.

"The poor thing looks quite sick, Doc," he said to me. "And my old aunts — you can imagine how they feel, especially after I'd told them that the doats would outlive them."

I couldn't get Gil to forget the doats, so I asked Harry to speak to the chief. A fat lot of use Harry was. He made Gil worse. "Suppose you've synthesized some new disease along with these creatures," Harry said accusingly, "a disease that can be transmitted from these — these mechanical contrivances to *real* animals!"

"For goodness sake, Harry!" I protested. "Why bring that up?"

"It's none of your business!" he snapped.

None of my business! That'll give you some idea of how our former tranquil friendship had degenerated. With Gil sleepless from worrying about the doats, and especially about Rover, the work of the Foundation was practically at a stop. Almost every

hour, there'd be a row between some of the staff and I was having to work overtime, trying to put things right. I knew that when the month's progress report was sent to London, I would be the one blamed for the bad work being done. I would be blamed either for not asking for more help, or for not stopping the manufacture of the doats, or for something. Whatever happened, I'd be the one to get called on the carpet.

So I finally went to see Gil with an ultimatum. "These doats," I said. "Ever since you built the first one, there's been nothing but trouble. So I'm going to give orders for them to be destroyed."

We had a first-class row, but at last I got him around to my way of thinking and he agreed. The watchdoats would be destroyed and he'd see to Rover himself.

I came away from his office satisfied and issued instructions for the watchdoats to be caught and put to sleep. Three of them were already in a cage, sick, but the others were still rolling about loose.

AFTER half an hour, we gave up the idea of catching the loose doats. The first time, they came when they were called. We penned them up, but within a

few minutes, they seemed to sense what was in store for them and they broke out—very damned literally. They retreated to one side of the pen, then launched themselves across it at full speed, hitting the opposite wall with just about the impact of a cannonball.

As they rolled swiftly away from their temporary captivity, an incident occurred which made me begin to wonder if perhaps our task was not going to be rather more difficult than I had at first thought.

One of the doats rolled straight under the tracks of a bulldozer that was being used to clear the ground for laboratory extensions. When the bulldozer tracks rolled clear of the doat, the ball of fur was squashed flat and patterned like a waffle. But within seconds, it was circular again and rolling happily away, without so much as a curl in its fur, and barking at us as if in derision.

I gave an order to the guard standing beside me.

"I don't like to do it, sir, and that's a fact, but I don't suppose there's any other way." He unslung his tommy-gun and raised it. "A pity—I liked the creatures," he added regretfully.

And, with that, he took aim and triggered off a burst of fire at a doat that was frisking around some thirty yards away. The bul-

lets whipped straight through the thing, knocking it back ten or twelve feet. Then, yipping madly, it ran away, hit time and again by more bullets. When the guard had expended two magazines on the one doat, he gave up. Whatever way you could destroy a doat, it wasn't by bullets.

Gil gave me the answer. In the formula he'd compounded for the doats, he had included a self-sealing mixture, rather like the stuff they use in fuel tanks in military aircraft. Any holes punched in a doat were automatically closed.

Naturally, I wasn't going to be beaten by a small item like that. I got the driver of the bulldozer to dig a big pit and then we put plates of doat food at the bottom of the pit. The idea was that when the doats got hungry, they would go to the food, and when they were all in the pit, we'd flood it. It was a magnificent scheme.

There was only one thing that defeated the plan — doats are un-sinkable.

I went back to my bungalow to think things over. There was more than a threat of mutiny among the women; they were holding indignation meetings. I knew I had to work fast, before they went to see the chief and in one way or another got him to overrule me.

I WAS on my second pack of cigarettes when I got a summons to go to see Gil. He was a new man, beaming with joy.

"Doc," he said, taking me into the small yard at the rear of his bungalow, "I want you to tell me what you think of this."

He led me to the pen where Rover was being kept. Rover, bright-furred, was rolling round the pen at a tremendous rate, and in the middle of the pen were three other smaller doats, each of them about four inches in diameter.

"Well, I'll be damned!" I said. Then I glared at him accusingly. "Gil! You never told me that you'd built in *that* sort of mechanism!"

"Doc, I swear that it's as much a mystery to me as it is to you."

We argued back and forth for a long time before we found the probable solution — Harry's experiment in B Block! Rover was always in there, and Harry had lost his notes and plans for a machine that could think independently and that could reproduce itself. Suppose Rover had rolled in there, sat on the plans and reports, and absorbed them! That must have been the "robbery."

Gil and I had to laugh. There was I, trying every means I could think of to destroy the doats, when all that was wrong with them was that more were

on the way! When the news got out, scores of females came to slobber over the kittups, as Gil had christened them, and within two days the watchdoats had produced more.

Then Gil's aunties had an increase in their doat family and all was well.

That was the start of a long period of ease and comfort for me. The Foundation work went along, without a shadow of trouble, for everyone there was under the spell of the doats, and even I felt grateful to the creatures.

As time went by, there were more and more doats around the place—smooth-haired doats, wire-haired doats, tabby, black and white, ginger doats—all sorts.

THERE was only one slight ripple on the surface of our contentment and that was when a group of officials came to put a value upon our doats. The government had decided to issue doat licenses.

It was finally agreed that doats up to the age of six months would be free from registration. After that, their owners would have to pay a yearly tax per doat, such monies to be paid on each first day of January.

And that, of course, was the government's big mistake. If it hadn't been for the tax, I'd go on

working at Hornwell. But I'm not fool enough to stay. I've handed in my resignation and I sail next month to take up a post at a research establishment that is being built in New Zealand.

Why?

Because Britain's finished. When January first came around, thousands of people turned doats out of their homes, in order to avoid paying doat tax. There were no Lost Doat Homes, so the creatures rolled over the countryside, multiplying rapidly by fission or budding or something of the sort. Food's what does it—and they eat almost anything.

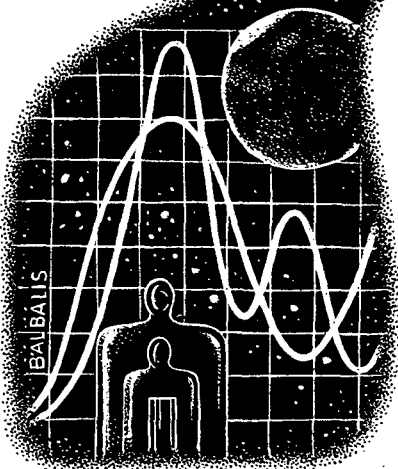
Now I'm no mathematician, but I can multiply two by two, four by four, sixteen by sixteen, and so on. Doats are indestructible. Therefore, how long will it be before Britain is completely carpeted with a layer of the creatures? According to my calculations, this will happen in a surprisingly short space of time.

That's why I'm getting out—going to a country thirteen thousand miles away, where I shall be able to spend the rest of my life in peace and not be drowned in a sea of doats.

Yes, New Zealand is the place for me—halfway around the world. Only one thing bothers me: How far can a doat float?

—JOHN BOLAND

**for
your
information**



FOR YOUR INFORMATION



BY WILLY LEY

**THE EARLIEST
ROBOT**

HERE once again is a column based entirely on questions and suggestions from the readers. I'll begin with an addendum to the piece on the golem and early robots in the April issue. It drew a fairly large amount of mail and several readers pointed out that I had not mentioned the "brazen man" Talos who protected the island kingdom of Crete.

The first one to do so was L. Sprague de Camp; it happened

that we had a dinner meeting only a day or two after this particular issue had appeared on the newsstands and he asked me how many years had gone by since I read Apollodorus. (Too many.) I have reread Apollodorus since, trying unsuccessfully all the while to remember just when I did read him for the first time. The book in question bears the simple title *Bibliothēke* ("The Library") and is a straightforward and clear accounting of ancient Greek mythology, written, in all probability, during the first or second century A.D.

The author of the "Library" is now thought to have been a contemporary of the Roman emperor Hadrian. Faint — very faint — internal evidence in the book seems to indicate that he was an Athenian or at least knew Athens. His name may even have been Apollodorus, but, modern experts on Greek literature point out, he was not the same as Apollodorus the Grammarian of Athens, who flourished around 140 B.C. Be that as it may, the book is useful.

As for the "early robot" Talos, Apollodorus the Mythographer has the following to say, in the translation by Sir James George Frazer:

Putting to sea . . . they were hindered from touching at Crete by Talos. Some say that he was a man

of the Brazen Race, others that he was given to Minos by Hephaestus; he was a brazen man, but some say that he was a bull. He had a single vein extending from his neck to his ankles, and a bronze nail was rammed home at the end of the vein. This Talos kept guard, running round the island thrice every day; wherefore, when he saw the Argo standing inshore, he pelted it as usual with stones. His death was brought about by the wiles of Medea, whether, as some say, she drove him mad by drugs, or, as others say, she promised to make him immortal and then drew out the nail, so that all the ichor gushed out and he died.

WELL, I freely admit that Talos had slipped my mind, but I wonder whether he should be regarded as the earliest robot. The family resemblance points more in the direction of a self-navigating missile. I'll even refrain from invoking Isaac Asimov's Laws of Robotics, but I do feel that a robot is characterized by the fact that it takes and obeys orders. Talos, then, turns out to be very much of a borderline case.

Another letter reminded me of the brazen giant in the City of Dis, the Lower Hell of Dante's *Inferno*. In Canto XIV of the *Inferno*, one of the cantos devoted to the Seventh Circle of Hell, an ancient giant made of several metals appears. Dante did make a reference to Crete,

hinting at Talos, but the detail is taken from the Bible, namely Daniel ii, 32-34.

You may remember that Nebuchadnezzar, the king of Babylon, made the somewhat excessive demand on his "magicians, astrologers and sorcerers" that they should not only explain a dream to him, but tell him the dream itself which the king had forgotten. But Daniel told him that he, the king, had seen a great image in his dream:

This image's head was of fine gold, his breast and his arms of silver, his belly and his thighs of brass, his legs of iron, his feet part of iron and part of clay. Thou sawest till that a stone was cut out without hands, which smote the image upon his feet that were of iron and clay, and brake them to pieces.

I think I am justified in saying that this image does not apply to our story, whether in the Biblical or in Dante's version.

The next case, also mentioned by several readers, is much more charming. One of my readers wrote:

I think you have overlooked what may have been the first robot to appear on the stage — Olympia, the mechanical doll, in Offenbach's opera *The Tales of Hoffmann*, which had its premiere in 1881. She is, of course, an imperfect robot, since she can speak only one word ("oui") and has to be wound up

twice during the first act. But she was convincing enough to make Hoffmann propose marriage to her, and the role has been sung by all the great coloraturas of the past three-quarters of a century. More recently, she was portrayed in the movie version by Moira Shearer.

Correct. I saw the movie and I know the opera. Nor did I forget Olympia when I wrote my column. With regret, I rejected her as a mere mechanical doll.

SHARKS IN FRESH WATER

ONE reader who lives in Chicago wrote to ask me whether it is zoologically possible for a shark to occur in a river, not merely alive, but hungry and in fighting condition. Seems he had come across a scene involving a fighting shark in a river in a novel and was poised to attack the novelist in turn. But he wanted ammunition, specifically the statement that I said so. I told him to keep his typewriter covered, for sharks do occur in rivers. To compensate him for the frustration of having to keep quiet, I told him another "fresh-water story" which should have amused him because he lives in Chicago.

I got this story first-hand from the late Fletcher Pratt, who, a few years before his death, did some reading of European books

for a New York publisher for the purpose of finding out whether they were worth translating for the American market. Well, some of the books he read were French mystery stories and one of them had Chicago for its locale and dealt—naturellement—with gangsters. One of them somehow got himself into the bad graces of some others and they decided to do away with him. But simply shooting him was too good for the guy. He had to die slowly and painfully.

According to Fletcher, the story was rather well researched. The French author evidently had a map of Chicago on his desk, and when he used English words and phrases, he used them correctly. Still—the gangster who was condemned to die was towed out into freshwater Lake Michigan for some thirty miles with a motor launch and then abandoned in a rowboat, with food for just one day, without oars and *without water!*

But to return to the fighting shark in a river. To begin with, a large number of different types of fishes spend part of their lives in fresh water and another part in sea water. Some, like the eels, normally live in fresh water, but go to the ocean to breed. Others reverse this process and live normally in sea water, returning to the rivers for breeding.

Among those who apparently do not care whether the water in which they swim is salty or not are some sharks, a few rays and sawfishes. In fact, one shark is actually known as the Ganges shark (*Carcharias gangeticus*) and has attacked many people while they were ritually bathing in the holy river.

Stories of attacks by sharks, generally speaking, are traditional enough to be a specific type of story, which means that they are exaggerated more or less for the purpose of conforming to precedent. But the Ganges shark is greatly feared and there must be some reason for it.

Nor is it restricted to the Ganges River; it seems to go almost anywhere in and around the Indian Ocean.

I CHECKED a publication of the Royal Zoological Society of New South Wales which is entirely devoted to sharks and rays in Australian waters. According to this book by G. P. Whitley, the Ganges shark has been reported in Australian rivers, but Dr. Whitley still makes a cautious question mark because no specimens have been taken. He points out that some other sharks in Australian waters look sufficiently like *C. gangeticus* from a distance to deceive an observer.

But it is certain that the Ganges shark occurs in all rivers and freshwater lakes of the Philippines, provided only that these can be reached from the ocean without a dam or a waterfall getting in the way. Usually the Ganges shark is joined in these freshwater excursions by another typical saltwater fish, namely the sawfish (*Pristis microdon*). As far as I know, this sawfish has never been reported to swim up the Ganges River, but it goes happily into the rivers and lakes of the Philippines.

Albert W. C. T. Herre of the School of Fisheries of the University of Washington in Seattle reported the amusing fact that some Filipino forest-dwelling groups, the Mandayas and Monobos of Mindanao, think that the Ganges shark and the sawfish are the males and females of the same species. The sawfish, probably because of their special "decoration," are thought to be the males, and the sharks the females. Possibly the Filipinos saw the two fish swim around each other full of mutual suspicion and took this to be the preliminaries for a mating. In reality, both the shark and the sawfish seem to return to the sea to mate.

This sawfish has also been observed in the Amazon River and its tributaries, in the large rivers of Borneo and Sumatra, and even

in Africa in the Zambesi River — below the great falls, of course.

The sawfish was recently found in Lake Sentani in Netherlands New Guinea. The lake is located in the extreme northeastern part of the Dutch (western) portion of the island. The shortest distance between lake shore and ocean shore is between 10 and 15 miles (maps of this area aren't too reliable yet) and the lake level is 250 feet above sea level. Geologists think that the lake once was an open bay which became separated and elevated by tectonic forces, possibly less than a thousand years ago. But this is long enough to have converted it into a freshwater lake by now.

BOTH sharks and sawfish live in Lake Sentani. The Dutch recently took two specimens of sawfish from it, measuring 9½ and 11 feet in length, and succeeded in getting them intact (though dead) to Holland, where they have been mounted in the *Rijksmuseum van Natuurlijke Historie* at Leiden.

The scientific attitude is best illustrated by the remark of the curator, M. Boeseman, of the Rijksmuseum, that the transportation of these bulky specimens by the Royal Dutch Navy is "much more remarkable than the occurrence of these specimens in fresh water."

Naturally, the question came up whether the sawfishes are the descendants of fishes which were trapped when the lake was separated from the sea, and which started breeding in fresh water, or whether there is a connection between the lake and the sea passable to marine fishes with the ability to live and thrive in both fresh and salt water.

Local and, as Boeseman says, "rather unreliable" information says that there is a long, winding river which is impassable in its upper reaches. "However," Boeseman continued, "although conditions may prevent the intrusion of specimens of the size we collected, it seems likely that small examples can make the journey, at least under favorable circumstances—for example in the rainy season."

A first report said that sharks also lived in the lake, but Curator Boeseman does not agree:

Sharks were not collected in, or reported from, Lake Sentani, and they probably do not exist there. The only freshwater sharks we obtained [during an expedition from October 1954 to May 1955] were found in Lake Janoer, a rather large and almost circular lake (diameter approximately 5 miles) situated on the narrow neck of the Vogelkop Peninsula, lat. 135° east. The altitude is about 200 feet. The physical characteristics of the effluent river Omba are insufficiently known, which makes it at present

impossible to establish with certainty whether the species is landlocked. The collected examples measure up to 5 feet and, according to a superficial examination, are closely related to the landlocked shark from Lake Nicaragua and to the Ganges shark.

It would be very nice if I could now climax this story with a shark in Lake Michigan or the Chicago River. Maybe, after the St. Lawrence seaway has been completed, a shark will show up in Lake Michigan to make things more intriguing along the Chicago lakefront. But right now the only example of such an occurrence close to home happened much nearer to the Atlantic Ocean.

The date was August 30th, 1954. Two boys, brothers aged 10 and 7 years at that time, were fishing in the Appomattox River from a bridge. They caught a fish which fought back energetically enough so that the boys had to club it to death. It was then measured and found to be 27 inches long. Then the boys wondered what it was. Well, it turned out to be a female dogfish, *Squalus acanthias*, which properly belongs in the Atlantic Ocean off the New England coast.

This was the first and, so far, only report of an appearance of this fish in fresh water, just north of Farmville, Virginia (Prince

Edward County), 120 airline miles from the ocean.

THE "FOOTLESS" BIRD OF PARADISE

IF the questions seem to run predominantly along zoological channels this time, this is due to a kind of accidental selection. Actually there were quite a number of questions about rockets and missiles in the mail, but these were all taken care of in the article on Our Missile Arsenal. The robots and the zoological items were left over.

The next zoological question, coming from New York City, is a simple one. Somebody's wife had bought a beautiful colored print of the Great Bird of Paradise, maybe for framing, maybe for decorating a lampshade. Before the lady did anything with it, her husband looked at it and found, beneath the English name, the scientific name of the bird. It said *Paradisea apoda* and that caused the question. Doesn't *apoda* mean "footless"? If so, how come, since the picture itself showed that the Great Bird of Paradise has powerful and large feet?

I knew the answer, but just for fun I got Richard Lydekker's *Library of Natural History* off the shelf to see what this standard work had to say about the case. What it did have to say made

me shake my head: "The great bird of paradise (*Paradisea apoda*), which was the first known representative of the entire family, derives its specific name from having been described by Linnaeus from a skin prepared in the Papuan fashion, with the wings and feet cut off."

Not so, Professor Lydekker. Carolus Linnaeus knew better, even though it is quite possible that the specimen he had, if he had a specimen, was footless. Linnaeus gave the specific name *apoda* not because he did not know any better, but in order to commemorate the story of the "footless" bird of paradise.

As a matter of fact, the very first description of the bird by Antonio Pigafetta, Magellan's companion and chronicler, mentions the feet of the bird and their color, which is surprisingly drab and "normal" when compared to the plumage. Pigafetta got back to Europe in the fall of 1522 and began writing his report for King Charles V soon afterward.

In the meantime, stories of the footless bird had filtered to Europe on the overland route, probably going through several translations.

The name of the odd bird, for example, arrived in Europe as *Manucodia*; the Malay name is *Manukdewata*. The specimens which an artist saw and drew

somewhere were without feet, but not without their wings.

NOBODY knows why the feet were often removed. The suspicion is that merchants thought it would increase the value. But this is only a suspicion. Moreover, the bird *Manucodia* was really two birds: the description mixed the Great Bird of Paradise and the Royal Bird of Paradise. All this had to fuse into a coherent story somewhere and the place where it fused was the great *Natural History* of Konrad Gesner of Zürich.

It was volume three of Gesner's work, the *liber tertius qui est de Avium natura*, which acquainted Europeans with the marvel of the East. The book was published for the first time in 1555 in Zürich, Switzerland.

This is what Gesner told:

In insulae Moluchis [the Molucas] which are situated under the Aequinoctio [equator] a dead bird can be found on the ground or in the water which they call *Manucodiatam* in their language that cannot be seen alive because it lacks legs and feet, even though Aristotle denies that a bird without legs and feet could be found. This one, which I have now seen thrice [probably meaning three different specimens], does not have any feet because it constantly sails high in the air. The body and bill resemble, both in size and in shape, that of the swallow, but the tail and the wings,

when outstretched, are larger than those of a hawk and approach those of the eagle, as regards their size . . . [The feathers] are very soft and almost resemble the feathers of a peacock hen; they cannot be compared to those of the peacock rooster for they do not have the mirrors [what in English is equally misleadingly called the peacock "eyes"] like those in the peacock male's tail. The back of the male bird is hollowed and the female, as ordinary reasoning will make you understand, lays her eggs in the hollow, and since the female's belly is hollow, too, the eggs are hatched by these two hollows. From the male's tail there hangs a thread, about three spans long and black in color, which is not quite round and not quite square [in cross section] and is quite similar to a cobbler's wire and it is said that the female, while she hatches the eggs, is tied tightly to the male with this wire.

Then Gesner added:

This bird, I do believe, does not have any other food than dew, since Nature assigned him to live in the air only. But that it lives on air, or eats the pure air, cannot be true.

Well, this was the story about the bird of paradise, as distinct from the reports about it. Pigafetta, who had seen the living birds, had described their feet. I don't know whether he had heard about the story or not.

But Charles de Lécluse, a French physician and botanist who wrote under the name of

Carolus Clusius, did know about the story, and when he learned in 1606 that several specimens of the bird had been received in Amsterdam, he went there to see for himself. The specimens were complete, with feet, and Clusius said so. This was a hundred and one years before Linnaeus was even born.

So Linnaeus could not possibly have been fooled any more and he wasn't. But Linnaeus thought of the story synthesized by Gesner when he made up the scientific name of the bird.

THE MAGIC MOUNTAIN

THE last item is a question from a younger reader who wants to know what natural fact, if any, is the basis of the story of the Mountain of Lodestone in the *Arabian Nights*.

To my knowledge, there is only one scientific paper dealing with this problem, written by the German geographer Oscar Peschel and published in a book of miscellaneous writings by him in 1877. I have used Peschel's paper once before (in the book *Lands Beyond* which Sprague de Camp and I wrote in 1951) and might as well do so again, for a quick check showed that no additional geographical paper on this theme has been published since.

The earliest mention which

Peschel, or anybody else, could find was in the *Geography* of Claudius Ptolemaeus of Egypt, written, by an amusing coincidence, at about the same time as the book by Apollodorus the Mythographer, with which this column started out.

He said that somewhere in the Far East, near the Islands of the Satyrs, lay an island which was just one enormous mountain of lodestone. If a ship built with iron nails passed close by, the magnetic mountain pulled the nails out of the ship which then, naturally, collapsed and sank. How that story came to Claudius Ptolemaeus is completely unknown, but it was possible that it had come from China.

The sinologists consulted by Peschel could not find a Chinese book old enough to have served as a source. But they did find a later Chinese writer who said that he had derived the story from "an older book." The name of this writer was So Sung and we know when he wrote because his book states that it was written when Jin Tsung was emperor. That, sinologists knew, had been from 1023-1063 A.D.

This is what So Sung put down: "Near the promontories and peninsulae of the Chang-hai [the sea of Cochin China] there are shallow places and lodestones in such numbers that the large

foreign ships, which have their bottoms sheathed with iron, are attracted by them when they come near and never are able to pass these numerous places."

The truth here is very simple and obvious. It was not the iron sheathing which was to blame, but the deeper draft of the "large foreign ships" that prevented them from going where the shallow-draft Chinese vessels went.

The trouble with literary sleuthing is, of course, that the older Chinese book mentioned by So Sung may have drawn its information from Ptolemaeus.

▷ The next source that can be dated accurately is another *Geography*, the author of which is usually called Edrisi, a rather drastic contraction of his name, which was Abu-Abdullah Muhammad ibn-Muhammad al-Edrisi.

EDRISI, born in Spain, lived from 1100-1166 A.D., mostly in Sicily. "The author of the *Book of Wonders* reports that no ship held together by iron nails can pass near the mountain Murukkeyyin without being attracted and held so fast that it cannot leave again."

The location of this mountain is somewhere to the south of the Strait of Bab-el-Mandeb, the southern entrance to the Red Sea. This is not only much closer

to home, it also no longer specifies that the Mountain of Lodestone is an island — it could be a promontory. And Peschel felt that this was just an exaggerated version of a real fact related one and a half centuries later by Abu al-Fida (or Abulfeda) who spoke about a promontory with a few remarkable features: "an iron mine well inland on its back and a place where lodestone is found on the part surrounded by the sea."

The source for Sindbad's mountain in the *Arabian Nights* is either Edrisi or the *Book of Wonders* mentioned by him. It may sound strange, but there is much reason to believe that the story did not go from Edrisi into the *Arabian Nights* directly, but via the German romance *The Pleasant History of Duke Ernest of Swabia*. This German romance, written about the middle of the twelfth century, is older than the Sindbad tales.

The Middle High German epic *Gudrun* (or *Kudrun*) also mentions the Mountain of Lodestone in a somewhat indirect manner. A ship is built using only copper nails and anchors of bronze are provided "so that the good heroes will not be troubled by the magnet." But *Gudrun* was written later, in the early thirteenth century, and since it was written for an audience which knew the

story of Duke Ernest, no direct encounter with the Mountain of Lodestone could be inserted.

In this time, the mariner's compass, invented by somebody living near the North Sea, was already in use. The skippers knew it worked and that was presumably all they cared. But the philosophers wanted to know *how* it worked and argued that the needle was attracted by the more numerous stars of the northern sky.

THIS interest in the reasons for the functioning of the compass needle is responsible for the absolutely last appearance of the Mountain of Lodestone. The year was 1508 and the place was a new map of the world, compiled by Johannes Ruysch.

On this map, the Arctic Ocean begins under 70° of northern latitude. Ten degrees farther to the north there is a string of 18 islands, alike in shape and size. Inside this string of islands there are four more islands. One is labeled Arumphei, another Hyperborei, the two others *insulae desertae*. And to the north of them there is one more island, with a Latin inscription which says: "under the arctic pole a rock of magnet-stone, 33 German miles (150 statute miles) in circumference, surrounded by the amber sea."

Below the first string of 18 islands and the tip of Greenland (which was drawn as being the easternmost projection of Asia) there is another Latin inscription. It reads:

Hic incipit mare sugenum
(Here begins the amber sea)
Hic compassus navium non tenet
(Here the nautical compass is no longer steady)
nec naves, que ferrum tenent,
revertere valent
(and ships built with iron cannot return.)

— WILLY LEY

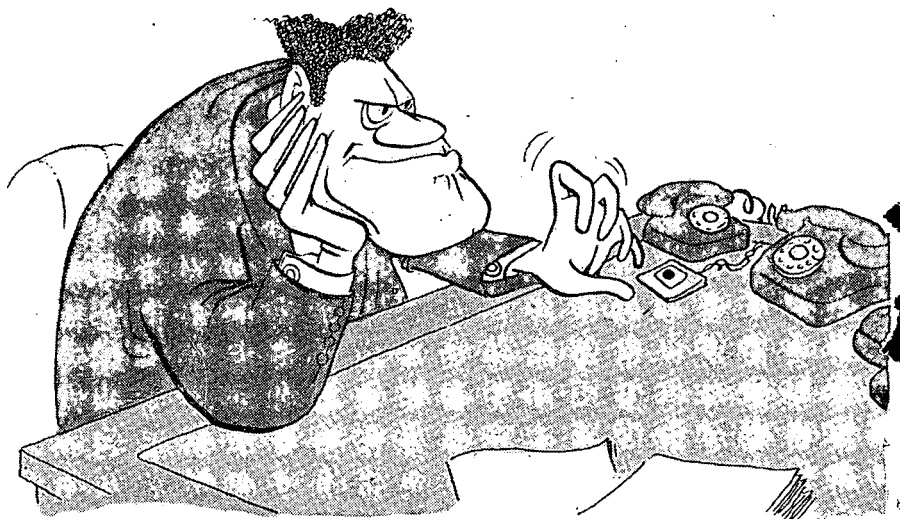
 Are YOU Using An 
Old-Fashioned
Bridge Score Pad ?
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The Sly Bungerhop

By WILLIAM MORRISON



COLMER was five feet four inches tall and as ferocious as a baby bunny, but he had a powerful voice for the size of him. He was using it now.

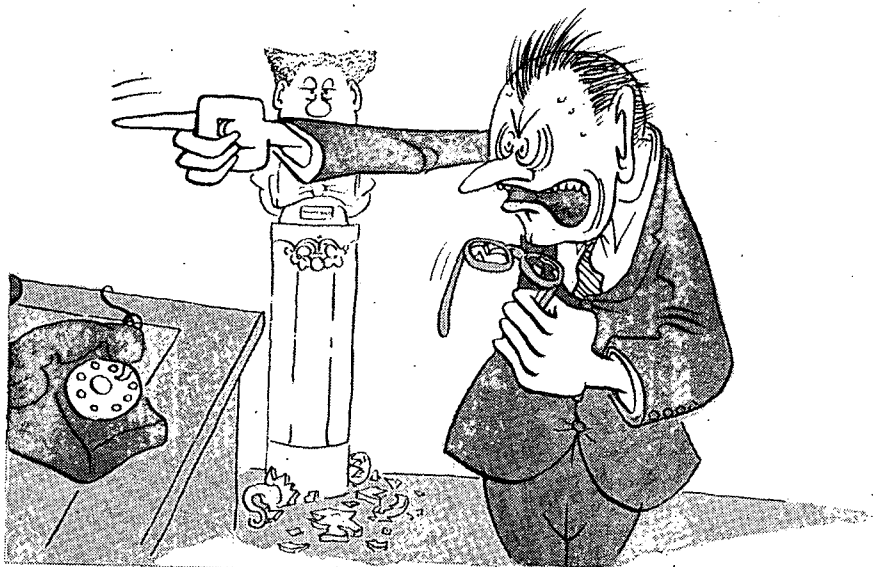
"You bloated battener on better men's brains!" he thundered allit-

eratively. "What makes you think you know more than I do about the future?"

L. Richard de Wike fiddled nervously with the button that would summon his secretary, but refrained from pushing it. He sighed and allowed the storm of

This was Colmer's chance of a lifetime — he could hear opportunity knock, but where in all Creation was the door it knocked upon?

Illustrated By MARTIN



vivid invective to burst around his ears. It was a part of his job.

There are publishing-house editors who are employed because of a great sensitivity to syntax and style; de Wike had a tin ear. There are editors who hold their jobs because of their ability to

make friends and attract authors; de Wike got on badly with his own mother, and all subsequent relationships were worse.

As an editor, de Wike had only one real talent and that was an ability to absorb punishment. It was enough. Let an author

come in and blow his stack — no advertising! a miserable job of production! a deliberate, calculated insult from Miss Hargreave on the switchboard, who pretended not to recognize his name! — and it was de Wike who had the task of riding out the storm.

His title was Executive Editor, but it might just as well have been Whipping Boy. After half an hour's exercise on de Wike, even the most outraged of authors found his passions spent and was then easy meat for whatever the other editors on the firm wished to do with him.

This particular storm, though, showed no signs of spending itself.

AT a momentary lull, de Wike cleared his throat and said: "v, really, Colmer. It's only that the editorial board feels your picture of thirty-first-century life lacks a certain *warmth*. Surely you can understand —"

"Warmth!" howled Colmer, freshly enraged. "Good God, de Wike, this is *my* book and *my* future. I don't tell you how to cheat an author out of his reprint royalties — don't you tell me what the thirty-first century's going to be like! Remember *Tales of Millenium!* Remember what *Life* said in its editorial about *T Is for Tomorrow!* Remember —"

De Wike closed his ears and

concentrated on remembering. True, Colmer was the best science fiction writer they had. He was also the most temperamental. He didn't look the part in either case — a mousy little man with thick glasses over his watery eyes; he was blind as a bat without them. His heroes conquered galaxies and alien maidens with equal ease and daring; Colmer himself had never ventured west of the Hudson River nor north of his apartment on the Grand Concourse. But the critics loved him and the cash customers ate his books up. So —

Crash!

L. Richard de Wike pulled out the mental plugs in his ears and paid attention. Colmer had been making a point about the hereditary cretinism in the ancestry of all publishers' men and had pulled off his glasses to gesticulate with them. He had gestured wildly and collided with the Luna Cup that rested proudly atop de Wike's desk. The crash was the sound of the Luna Cup flying across the room and smashing into silver-plated scrap against the base of the marble bust of L. Richard de Wike as a boy.

"Now, really, Colmer!" De Wike was horrified. It wasn't just the cost of the cup — that had been only thirty or forty dollars. It was the *principle*. That cup was awarded for the best line of

science fiction books; it had been the property of de Wike's firm for six years running and it had cost a pretty penny, indeed, to set up an organization willing to award it to them, to pay the expenses of the award dinners, to keep the judges complacently in line, year after year.

Colmer stared blindly at de Wike. He said in a furious roar, "My only pair of glasses, ruined. And you worry about your lousy cup! Oh, you'll pay for this, de Wike!"

And he blundered blindly out of the office, crashing against a chair, a file cabinet and the half-open door.

COLMER turned in the general direction of the elevator, afraid of bumping into someone. Hamlet could tell a hawk from a handsaw, but Colmer couldn't — not without his glasses, not from as much as a dozen feet away. Even a human figure merged into mists at six feet or so; he could tell that it was a figure, but identity, age and sex were beyond his recognition. Not that he much cared. The memory of his insults and ill treatment was too strong in his mind.

"My only glasses!" he muttered searingly. "The thirty-first century!"

A figure that might have been either a pink-faced baboon or a

fat man in a brown suit appeared out of the mists and murmured pleasantly: "This way, sir."

"Thanks," growled Colmer, and fumbled his way to the elevator.

Usually that was easy enough, even without his glasses; de Wike's office was on the top floor, and ordinarily there would be one elevator waiting there, door open, until the starter on the ground floor buzzed it to start its descent. Not this time, though. All the doors were closed.

Colmer found the handiest door, stuck his face almost into it to make sure it wasn't another office, and located a signal button. Bending down almost to touch it with his nose to see that it wasn't a fire alarm or Western Union signal, he put his forefinger on it and pressed. It was an elevator button, all right. It said, "Up."

He waited for a second, and then the door opened and he stepped in.

Then something registered with him for the first time.

De Wike's office was on the top floor.

But the button had said "Up." He stared witheringly at the operator, a vague blue blur of uniform with a vague blonde blur of hair on top. Practical jokes?

The operator said in a pleasant soprano voice, "Wettigo mizzer?"

Wike demanded suspiciously,

"What are you talking about?"

"Ah," said the pleasant soprano, and then there was a sort of flat, fleshy click, as though she had popped her bubble-gum. "Where to, sir?" she asked.

"Where to!" he mimicked. "Where the devil can I go to? Down, of course! I want to get out of this confounded place before —"

"Sorry, sir. This car only goes up. Where would you like to stop?"

"Now stop that!" he commanded. Up! There simply was no up, not from de Wike's office — not in this building. "I want to go down. I want to go down now. And no nonsense about it."

"Sorry, sir. This car only goes up. Where would you like to stop?"

HE stared at her, but her face was no more than a pink blur under the blonde halo. He would have liked to get a better look at her — he was nearly sure all the elevator operators he'd ever seen in this building were men — but, after all, you can't put your face right up against that of a strange blonde with no better excuse than that you've broken your glasses. Or can you?

The pleasant soprano said again, "Where would you like to stop, sir?"

Like a damned parrot, he

thought scathingly, or like a machine. But what could you expect in a building tenanted by creatures like de Wike?

He chose a number at random. "A hundred and tenth," he snapped. "And let's get started!" That would hold her.

"Sorry, sir. We're already started, but this car only goes up to ninety-nine."

"Ah," he said disgustedly, "ninety-nine will do."

What was the use of going along with this nonsense? And the car certainly wasn't moving; he was sure of that! He'd ridden in enough elevators to know. Why, his famous free-fall sequence in *The Martian Chanukah* was based on an express elevator ride from the top of the R.C.A. Building. If this were going up, he would feel heavier; if it were going down, he'd feel lighter. And all he felt was — why, he thought wonderingly, *queasy*. Maybe it was moving, some way or another; certainly he seemed to be having a little trouble keeping his balance.

Colmer leaned against the back of the car and glowered blindly into space. Above the closed door there were winking pink-and-green lights — like an indicator, he thought. Well, all right, they were moving. Good. Since the only way to move was down, they would soon be at the ground

floor, and he would be out of the building, and then it was only a short cab-ride to the offices of Forestry, Brasbit and Hoke, who could be relied on to publish his books the way he wrote them, and who had said as much just the other day . . .

Still, he thought, softening, de Wike wasn't such a bad sort. As editors went, that is. And old man Brasbit was known to have some idiosyncrasies of his own — for example, there was the time he had hauled five of his own authors into court for violating the option clauses of their contracts—and, on the whole, de Wike's firm could be counted on to be reasonable about things like that. If a better offer turned up for a particular book, they wouldn't usually stand in an author's way.

AND this present difficulty — well, who was to know whose impression of what the thirty-first century would be like was correct? Colmer thought of it as harsh and mechanized; de Wike's editorial board thought there would be more human softness. Well, why wasn't that possible, too? Suppose in chapter nineteen, for instance, he had the Eugenics Committee set aside the ruling that ninth cousins couldn't intermarry and —

"Here you are, sir. Ninety-nine."

"Oh." Colmer blinked. The door

was open and the queasy-making motion had stopped. "Thanks," he said, and then, moved by a sudden impulse and the hell with what she might think of it, he put his face close to hers.

She didn't slap him.

She didn't draw back.

She just stood there, waiting.

Colmer was suddenly conscious of two things, one of them obvious because it was positive, the other negative and hard to trace.

The obvious thing was that this was, indeed, a young lady — or a doll. The face was a doll's face, with bright, unwinking blue eyes, pink and almost inhumanly perfect features.

The negative thing was harder. Something was missing. And then, in a moment, it came to him. She didn't *smell*.

Colmer was no lady's man, but he had not completely isolated himself from them. Moreover, he read the magazines and — that unfailing barometer of what their readers really liked — the advertisements the magazines contained. He knew that no self-respecting American girl would be caught dead without at least a few drops of scent behind each ear and maybe some sort of perfumed liquid or spray on the hair, plus, of course, something dainty-smelling to protect her from perspiration all day or all week long.

But there was no odor whatso-

ever to the bright and doll-like operator of the car.

She said, inches from his face, "You get out here, sir. Ninety-nine."

A little afraid of her and more than a little perplexed, Colmer stepped out. She was pretty but vacuous and insistently repetitious. He wondered if it was worth his while to ask the elevator starter about her. The starter should be right there, under the clock, or chatting with the owner of the cigar stand —

Colmer looked blearily and wonderingly around him.

No elevator starter. No cigar stand. No clock.

Wherever he was, and his myopic vision made it more than merely hard to tell, he was not in the lobby of the Pinkstone Building, where de Wike had his offices.

As far as he could tell, he wasn't in a lobby at all.

THERE was a droning electrical sound in the air and a faint, sneezy tang of ozone. Long, glowing corridors spread away from him on either side, and though he could see no details, he could at least see that some of the glowing light came from objects in motion along the corridors.

He peered unbelieving, shaking his nearly blind head.

This was the end, he thought sourly. If this was some trick of de Wike's — if somehow de Wike had conspired with the operator to bring him to the basement of the building or —

No. None of that was possible.

Colmer reached out one hand to the wall of the corridor for support, more moral than real, and recoiled. The wall was tingling and warm; it seemed to be vibrating.

He screwed his eyes shut and opened them again. Near-sightedness was sometimes an oddly comforting affliction; by being unable to see much of the world around one without glasses, one had sometimes the impression of being wrapped in warm and fuzzy cotton batting, insulated from harm.

But not this time.

This time, Colmer didn't like the world around him and he wanted to know it better.

He opened his eyes and placed his index fingers on the skin at the corners of the eyes, pulling them taut and Oriental. Generally that helped; deforming the eyeball by a little outside pressure sometimes partly took the place of glasses . . .

Well, no. Or did it? He couldn't tell. The vaguely glowing nimbus of light that he could see moving *did* lose some of their fuzziness, but they were warped

and distorted into shapes he couldn't recognize —

Or didn't want to.

He shook his head again and felt the beginning tremor of physical fear.

It was all right for philosophers, he thought numbly, to talk of being unable to distinguish dream from reality. Maybe they didn't know whether they were Chinese sages or blue-bottle flies, but maybe they spent their time in a daze anyhow. Not Colmer. *He* knew: he wasn't dreaming. This was incredible, but it was real. You don't have to pinch yourself to find out if you're awake. You just know. When you stop knowing, you're —

You're crazy, he finished.

HE put that out of his mind, though not easily; but if he was crazy, there didn't seem to be anything he could do about it.

Drunk, maybe? No, he hadn't had a drink that day — de Wike, that skunk, hadn't taken him to lunch.

Hypnotized? No, that was also pretty improbable; he had seen no one but de Wike; and de Wike, whose personality was neither electric nor even quite bearable, was not the sort of person who could hypnotize another. De Wike couldn't hypnotize a poet, much less a science fiction novelist, always alert for plot gimmicks.

That seemed to leave insanity.

Well, Colmer thought gloomily, facing up to it, most writers were nuts anyway, or else they would be real estate salesmen, where the big money was, or editors — De Wike kept pestering him about heading their science fiction department. If that was the only remaining possibility, by all the laws of scientific evidence Colmer had painstakingly learned at the feet of such Titans as Einstein, Jeans and Sherlock Holmes, then it had to be accepted as true.

Unless —

He laughed ruefully. It was a silly thought, but there was one other possibility.

Suppose, for instance, that maybe one of the stories he made his living by was — well, true?

It was funny. More than funny — it was downright hilarious; he was beginning to drink the stuff he made himself. But just suppose, he thought, stretching the corners of his eyes in a vain attempt to see just what the devil it was he had got into, just suppose there really was such a thing as, for example, a weak spot in the paratime web. Whatever that was.

He'd used it glibly enough in stories and he had intended it to mean that certain places might be sort of gateways between the familiar world of H-bombs and

TV commercials and — different worlds. Parallel worlds, in a space of more than four dimensions.

Suppose it was true? Suppose the elevator had somehow transported him into an *if* world or maybe another planet?

There was a strange taste at the back of Colmer's mouth. He looked around him with effort. Wherever he looked, the walls glowed with light. The ceiling — high overhead, as far as he could tell — also glowed. The light varied in color, but his eyes, even pulled out of shape, were too inefficient to pick out details. In some places, the lights were moving.

Now what would that be? A factory, perhaps?

HE suddenly got part of the answer. People, he thought. People walking. Their clothes were as luminous as the walls; maybe that was the moving blobs of light.

Colmer took a deep breath and walked toward the moving lights.

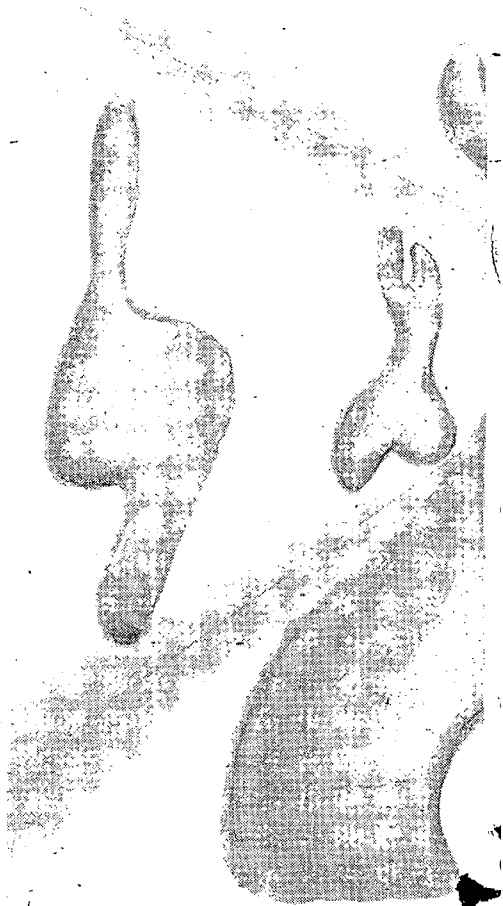
The confounded things pursued their own paths. He selected a lavender pair of blobs, hurried toward them; they were gone. Ducked into a doorway? He couldn't tell. Disappointed, he stopped short.

A pale blue glow appeared and came toward him. When it was a dozen feet away, he saw that

it was in fact the approximate size and shape of a man. He cleared his throat and blocked the path.

The pale blue glow said, "You-all tucker me?"

Colmer jumped; deep-south



Alabama he had not expected. He asked, "What?"

"Dassita say. Tucker me?"

Colmer said miserably, "I don't know what you're talking about. All I know is I pushed the up button and—well, here I am."

The man in glowing blue said something quick and impatient; Colmer couldn't even hear him, much less understand. He turned away and called something to a glow of muted rose that was approaching down the hall. It



sounded like, "Putta sly bungler-hop"; there was more to it, but not that Colmer could understand.

The rose glow came closer and, in turn, revealed itself to be human.

There was a very quick, low-voiced conference, and then the rose glow said, "*Que veut-vous?*"

French, thought Colmer. Could he be suddenly in France? He said slowly, "I only speak English. Can you tell me where I am?"

Click-pop — it was the sound the elevator operator had made, like popping bubble-gum. Then the man in glowing rose said, "You are in the Palace Building, on the tenth floor. Can't you see the signs?" It was a pleasant, reassuring voice — but accented somehow. The accent was not French, whatever it was.

Colmer said doubtfully, "I can't see much of anything. My eyes are bad and I've broken my spectacles."

"Ah," said the pale blue glow in a tone of satisfaction, "putta sly bungler-hop."

"Wayman," the rose glow said, and then, to Colmer, "You came in the slide?"

"I came in the elevator, if that's what you mean."

There was a silence, as though the man were studying him.

Colmer made himself say, with studied indifference, "Just as a

matter of curiosity, could you tell me what planet we're on?"

THE man laughed, but there was a puzzled wonder in his laughter. "Excuse me," he said, "we're rushed just now —" He began to move away.

"Please," Colmer begged blindly. "I'm serious. Are we on — uh — the planet Earth?"

"Of course!"

"How far away is the Sun?"

"The Sun?" Pause. "I don't know. Ninety million miles, some thing like that."

"How many moons?"

The man laughed again, but with a definite note of strain, backed away. He must think I'm crazy, thought Colmer, and small wonder!

"Wait!" Colmer called. "Look, can you tell me — let's see, can you tell me where the manager is?"

There would have to be a manager, or something like a manager, and maybe that would get him to someone who could explain things.

"Manager?" The voice was doubtful. "I don't know — oh, I see. Front office, eh? First floor."

"Thanks," said Colmer gratefully. "How do I get there?"

"Side drop," the man said impatiently.

"What's that?" Colmer begged, but the man was gone.

Colmer cursed to himself. He should have saved a few choice words, he thought, and not wasted them all on an innocent like de Wike. He had never before met such unhelpful people.

Still, maybe things weren't so bad. Side drop. Maybe —

He moved over to the side of the corridor. That might be the "side" part. He stuck his nose close to the wall and moved along until he found a pattern of lights that seemed to offer some help. The glow of lights in his near-sighted eyes nearly blinded him, but at least he could distinguish the fine details in the difference of color.

These marks were red letters against a glowing gray background — syncopated, sketchy letters that formed misspelled words: "Hozontal transmit," "Noth End," "Wes End," and — "Syd Drop."

This was the place, all right. Now what?

He ran his eyes along the walls. No buttons to push. Apparently there was some trick to it. He gingerly felt the wall all around the glowing words "Syd Drop" —

It vanished. The floor fell away from beneath him.

FOR a second, he was petrified, and then some invisible force steadied him and he came to a stop.

Now where was he?

There were more moving lights here than on the tenth floor and some of them were approaching him.

"Excuse me," he said, clutching at the nearest. "I'd like to talk to the manager, please, or whatever you call him."

Click-pop, again. A woman's voice this time. "Manager? One who manages — oh, North Transmit."

Apparently even the females of these people were sparing of words. He sighed and stuck his face up against a wall again. This time he knew what to expect and he was not surprised when he suddenly felt himself clutched, whirled and carried rapidly in a horizontal direction. Off the "Noth Transmit," he stared around, stretching his eyes, which were beginning to water and ache very much.

There was a large glowing patch of white light set in the middle of the gray, and a greenish glow moving toward it. He intersected the greenish glow. "Is this the manager's office — I mean the front office?"

The greenish glow growled at him and moved away. Colmer hesitated. Then he heard voices coming from behind the glowing patch of white. He moved toward it slowly.

One of the voices was familiar.

It was saying, "Thing temple sly. Putta bungerhop, thing."

Colmer pulled at his aching eyes again and saw, through the square of white, two lesser glows, one violet, one a familiar blue. That was the voice. It was the man he had met back on the tenth floor, here before him.

Colmer sighed and felt his way through the glowing white door. As long as the man was going this way anyhow, why hadn't he escorted Colmer and spared him the nearly impossible job of finding his own way here?

These people, curse their inconsiderateness!

COLMER said loudly, "I'd like to speak to the manager."

There was no click-pop this time; the man answered him at once in English. "About what you're doing here?" The voice was again accented, but in a way like nothing Colmer had ever heard.

"That's right," Colmer said doggedly. "How did I get here?"

"That's what I was going to ask you," said the manager. "Do you have a permit for the temporal slide?"

"The what?" Colmer gritted his teeth. "Look, I was waiting for the elevator. I pushed the button marked 'Up' and the elevator stopped and —"

"Temple sly bungerhop!"

crowed the enraging blue glow.

The violet one, the manager, said, "Wait a minute. Where were you when this happened?"

"Why — the Pinkstone Building. The twentieth floor. That's the top floor, you see, so I wondered about that button. But I had just broken my glasses and I couldn't see very well, so — well, here I am."

There was a rapid and confused babbling among the glows — more voices than two, Colmer realized, and by squeezing his eyes again, he discovered that there were at least half a dozen persons in the room. Colmer couldn't follow a word of it, though it had a haunting familiarity, like syncopated and slurred English, until the violet-glowing manager's voice said, "Wait a minute until everyone gets his translator on."

There was a series of tiny click-pops.

"Now," said the manager, "you'd better explain." His tone was mild, but it seemed to carry a threat.

Colmer said bravely, "I've got nothing to explain. I never saw this place before in my life. I've had the devil of a time getting around — practically had to feel my way — and your people weren't very helpful, either. They didn't tell me a thing except how to reach this place."

Pause. Then the manager's voice said meditatively, "That may be just as well. What do you think, Arrax?"

A silvery glow just within the range of Colmer's vision said, "But how did he find the temporal slide?"

"What about that?" the manager demanded. "What were you doing just before that?"

"Why—" Colmer stopped, remembering. "I was talking to my publisher. We'd been discussing a new book of mine—I'm a science fiction writer, you see. The book was about the thirty-first century. I said the thirty-first century was likely to be a harsh, mechanistic—"

"Out loud?"

"What? Of course. How else?"

66 **A** H," said the distant bass rumble of the silvery glow in a satisfied tone. "And the monitor—"

"Yes," agreed the manager, less satisfied. "The monitor vectored him in to the temporal slide and he pushed the slide button up. The question is, now what?" He paused. "You," he said to Colmer, "when did all this happen?"

"When?" Colmer was completely at sea. "About one-thirty, I'd say. I remember it was time for lunch and—"

"You misunderstand me. What year?"

"What year?" Colmer blinked and a great light seemed to come over him. "Oh," he said faintly. "Temporal slide, eh? What year? You mean—"

"Of course," said the manager. "You got on the temporal slide, going up. You're in the ninety-ninth century."

There was a ragged series of click-pops and another argument raged in the slurred and sketchy English. Colmer didn't mind; it gave him a chance to catch his breath.

What an opportunity! What an incredible, gorgeous, million-billion-trillion-dollar *opportunity!* The ninety-ninth century and here he was smack in the middle of it! Let de Wike argue with him now—here was his chance to write science fiction that would live and sell and make his name famous forever!

There was a sudden local concentration of chatter at the door and then a new figure in a glowing suit—orange, this time—joined the party. He approached Colmer, close enough so that Colmer could actually see the face. It was a man, not young, not old, no taller than Colmer himself, with a wise and patient and studious face. He poked something glittering and gleaming under Colmer's eyes. Flaring white light danced out and blinded Colmer for a second.

"Hey! cried Colmer. "What the devil do you think you're doing?"

Click-pop; a series of click-pops. The manager's voice soothed, "Ogratz is a doctor. You understand, we have to have a doctor look you over."

"Oh, all right," Colmer grumbled. "Listen, I've got a million questions! My year was 1958. Now what happened right after that?"

The booming silver-glow voice said, "The recommendation for the monitor, then, is to replace it with a human."

COLMER interrupted: "Excuse me! Now, after 1958, when was the next war? Did the Russians — hey! Ouch!"

It was bright green light this time and it stung. The doctor said something under his breath in a satisfied tone.

The manager's voice said, "Arrax, the whole thing was a stupid error; I've always said that robot monitors were a false economy. We'll have to change the code word. 'Century' isn't any good now. Maybe we ought to replace the slide operators, too, but we can table that. As for this one —"

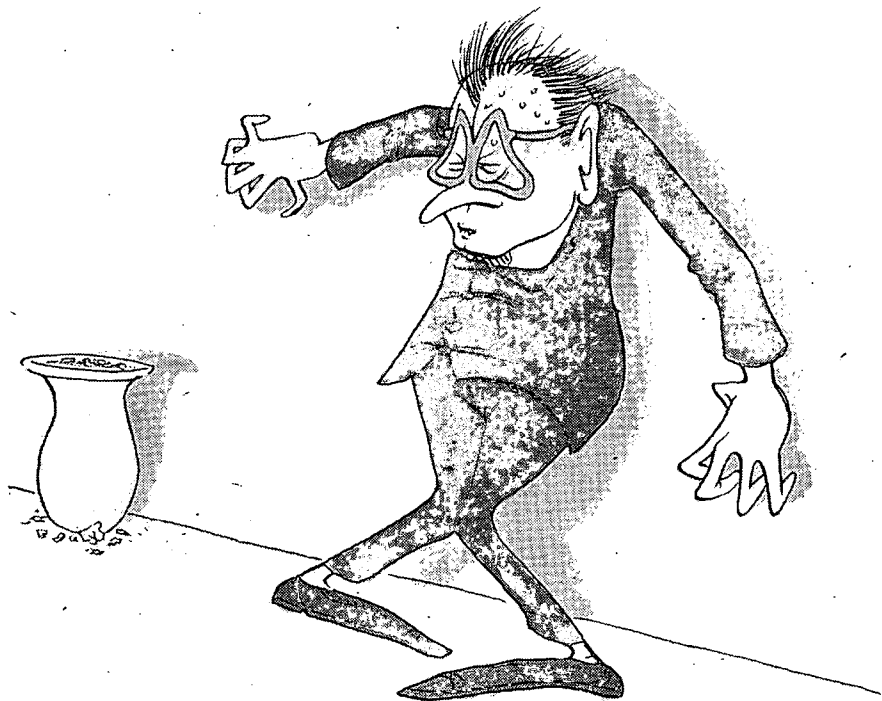
"You mean me?" Colmer yelped. "Look, get this fellow away from me, will you? I want to know about the H-bomb. Was it ever used? Did Nasser get —"

"We'll vote yes on the moni-



tors," said Arrax. "I leave the arrangements to you. What about him, Doctor?"

The doctor stepped away from Colmer, scratching his cheek. "Well," he said meditatively, "it checks. Fovea central, bilateral occlusions. Efficiency? I'd say fif-



teenth percentile rods, twenty-fifth cones — oh, yes. Without his glasses, he's just about blind. Couldn't have seen a thing."

Colmer began to grow irritated. "I *told* you I didn't see anything. Now why don't you get me some glasses as a starter?

I'd like a look at what technological wonders you people —"

"Shall I?" asked the doctor.

The manager chuckled. "Why not?"

"Thanks," said Colmer, gratified as the dim orange glow that was the doctor bent and did

something with what seemed to be the equivalent of a little black bag. "Now about my questions. Do you think you could spare me someone who speaks English to act as —"

"I have the report," the manager said, ignoring him. "The people who spoke to him told him nothing of any consequence."

"Good," said the silvery glow named Arrax. "Take care, then."

"Wait a minute!" Colmer cried. "That sounds as if you were going to send me back! Please, just let me stay a little while, won't you? I promise not to be any trouble! Listen, there must be lots of things I can do for you — bring you up to date on the twentieth century, maybe, or help your historians check facts, or —"

"Certainly," soothed the manager. "Of course." He advanced on Colmer and took his arm. "If you'll just come this way, we'll take care of everything. Into this little door — that's right. And — here, don't forget these —" He pressed something into Colmer's hand.

There was a sudden flare of polychrome light, brighter than light had ever been before. . . .

The world went black, and spun, and then sharpened again. Colmer, ready for anything, fearful of everything, reached out, touched a wall, braced himself, turned —

A man was approaching him. "Arrax?" he called fearfully. "Dr. Ogratz? Manager?"

"Why, Colmer!" said the voice, pleased. "I thought you'd gone."

It was L. Richard de Wike.

Colmer slumped against the wall. It was all over. It was too late.

"**H**EAVENS, but he has melted fast," thought L. Richard de Wike. And it was true. Colmer had acted very peculiarly — what was that nonsense of looking for an "Up" button at the elevators? — but now he seemed quiet, mild, reasonable — almost dazed.

"Look," said de Wike eagerly, "suppose we go out to lunch? We're reasonable men. It doesn't matter about the Luna Cup — and I'm sure we can work something out about your book. After all, I'm no expert on what's *really* going to happen centuries from now —"

Colmer turned and looked at him through his new glasses — funny, thought de Wike; I could have sworn he said those others were his only pair. And these were odd-looking, rose-pink, of a most unusual shape.

"That's true," said Colmer at last. "And, damn it, neither am I."

De Wike blinked happily. "Why, now, that's the way to

look at it, Colmer," he said. "Let's go to lunch now, shall we? Just you and I, eh?"

Colmer paused.

He looked around him, with the sharpness of vision the new glasses had brought. *Here* was where he had pressed the "Up" button (no button, no scar, no shadow now to mark where it had been.) *There* was where the monitor had met him, triggered by the code-word "century." A secret recess in the wall? An imagined figure, born of suggestion and gullible neurones?

Whatever it was, there was no trace of the monitor or its hiding place there, either. No trace of anything. No chance that, ever again, Colmer would find the key and unlock the door to the future, where—surely this time!—forewarned and careful, he would find some way to stay there long enough to learn.

No chance?

Colmer drew a deep breath, his first breath of hope and—greed? Whatever it was, greed or nobility, that makes men want to know what is forbidden to them.

He said, "Sure, de Wike." He said, "Certainly, de Wike, let's talk things over. The two of us understand each other, after all!" And he said, "Oh, by the way, de Wike—I just happened to think, de Wike. Haven't you kept

asking me to head up your science fiction book department?"

AND so it was that Colmer, rose-pink glasses and all, came to occupy the office next to de Wike's, and the refurbished Luna Cup now sits atop his desk.

He's a good editor. He understands the problems of the writer; he sympathizes deeply; he comprehends fully; and the contracts he signs give an author a full fifteen per cent less than any other editor in the firm has ever been able to manage.

His employers are well satisfied, except for his one little idiosyncrasy.

Editors do their work over the lunch table and maybe so, in a way, does Colmer; but what his colleagues see is a man who brings a brown-paper bag of sandwiches to the office every morning, and never steps out of the place at noon; and every day from twelve to one-fifteen, stands in the corridor outside his door, where once a blurred figure led him to a button.

He has a sandwich in one hand and a dictionary in the other; and it is munch and read, munch and read, for seventy-five minutes every day; and if there is a word that will unlock the monitor's help again, it begins with no letter up through the letter R.

— WILLIAM MORRISON

THE DARK STAR

By WILLIAM TENN

For everybody else, it is the anniversary of the first Moon flight, but for me—it's just a tragically comic Valentine!

SO IT'S here again, is it? Another year and it's here again. The Day. Only this time it's the fiftieth anniversary. Your editors and program directors will be really spreading themselves tomorrow. Celebrations in every major city on Earth, a holiday on every planet

of the Solar System, and on the Moon — well! Noisemakers for the schoolchildren, speeches in the parks, fireworks, drinking, dancing, parades — and you boys will have to cover it all. *The Day*.

Go ahead, sit down and make yourselves comfortable. I've been expecting you. I don't have very

Illustrated by DILLON

much that's new, I'm afraid. It will be just about the same old story everyone's heard for the past forty-nine years, but they never seem to get tired of it, do they?

Human interest, your editors call it. The story behind the news, the color behind the historical event. The strictly human side of today's holiday—that's all I am.

Those of you who want any refreshment, please help yourselves. I particularly recommend that Martian brandy; they're turning out some highly drinkable stuff in New Quebec these days. No, thank you, young fellow, I'm afraid I can't join you—a man's lining gets real soft at my time of life. But I still like to watch, so drink up, all of you, drink up and drink hearty.

The fiftieth anniversary. The years, the years! There I was, young and practically bubbling with high-test fuel like all of you, and here I am now, full of doddering, aimless talk. And in between, a full volume of history, but such history as the human race has not written for itself since it began climbing down from the trees.

And I was there on the very first page of that volume!

I WAS there, and Caldicott, Bresh, McGuire and Stefano. Just the five of us, five desperate

and determined competitors, all that was left of an even hundred determined and brilliant young men that the best universities in the country had sent. We'd been examined mentally and examined physically, tested on our math and tested on our nerve, eliminated for this reason and for that reason, too tall, too slow, too heavy, too talkative—until only the pleased, happy and shakingly tense five of us were left.

Then the finals began.

Picture it, five young men on a plane bound for the Arizona Research Station, looking at each other, wondering who it was going to be, who was going to end up the winner, the pilot of the first ship to land on the Moon. Each one of us wanting to be the man, the Columbus who would open up not a mere hemisphere but the incredible, infinite universe itself. Each of us wanting to be that man so bad that we had terrible little aches running up and down our intestines.

Try to picture the world we'd grown up in. The first radio-controlled rocket to burst outside the Earth's atmosphere, the first piloted ship to go halfway to the Moon and back, the first robot craft to circle the Moon—interplanetary travel, *space* travel, getting closer all the time. The newspapers full of it, the television full of it, our very grammar-

school textbooks chockful of it.

And now, just as we'd graduated, the question was no longer exciting but remote news. It was as personal as a new neighbor moving next door. Who was he going to be, what would be his name — that first explorer — that hero of all-time heroes?

There were exactly five possibilities: Caldicott, Bresh, McGuire, Stefano — and myself. The Moon ship had been built and was waiting for its pilot. One of us would be the modern Columbus.

I remember glancing around from face to face in that plane and thinking to myself that we could have been brothers. Cousins, anyway.

The ship had been built to exact specifications with regard to lift and mass, and there was only just so much room for the pilot. He had to fit into his cubicle like a machined part, which meant a maximum height and a maximum weight, but still nothing sacrificed in the way of strength and reflexes.

So we were all, all five of us, small, stern-bodied men with almost identical scholastic training behind us and almost identical psychological mechanisms inside us. The way we moved, the way we noticed things, even the way we talked — everything was remarkably, eerily similar. Especially considering that we'd each

come from a different part of the country.

Any one of us would have been adequate. But the Moon ship had cost millions of dollars and nine years of painstaking construction. For that, they didn't want adequacy; they wanted the best that could be found.

WE BEGAN talking to each other guardedly then, just before we landed at the Arizona Research Station. Not to make friends — hell, no! — but to get a line on relative weaknesses and strengths. Believe me, the differences were almost microscopic.

Stefano, for example. He had one more math course to his credit than I. Theory of Equations, I think it was — and how I bit my lip over skipping it for the sake of the Glee Club Tuesday afternoons! But it was on the record that he'd sprained his back in a high-school football game. Of course, the sprain was ancient history and long over with; still, it was on his record. How would you figure it?

And how would you figure, we wondered as we landed at the hot, dusty Station and were led right into our first testing complex, how would you weigh the balances of sexual involvement? McGuire was married, a newlywed, Caldicott and I were more or less engaged, while Stefano and Bresh

were carefree characters who took what they could where they could.

One way, engagement, marriage, pointed to an adjusted emotional life — and adjustment rated high. And someone to return to might provide that extra bit of incentive where the chances of return were considered no higher than two out of three.

On the other hand, McGuire's wife, my Irene and Caldicott's Edna might be looked upon by the powers-that-were as so much psychological dead weight, so much extra responsibility and worry that the men involved had to carry. Stefano and Bresh, I could just hear some jowl-heavy individual in a white smock argue, had nothing to concentrate on but themselves and the ship.

I tell you, I began to get awfully moody and regretful about Irene. Fine, I'd say to myself, I love the girl. But did I have to go and get engaged?

Yet there was no way to figure. You didn't know how they'd rate it.

Once we got into the routine at the Station, though, there was very little time to worry. Morning after morning, we'd be dragged out of bed and, pushing our yawns in front of us, made to go through a round of tests. Afternoon after afternoon, we'd get particularized instruction in the

handling and maintenance of the Moon ship and made to go through the motions in a dummy model. Evening after evening, there'd be a light supper followed by a dessert of more tests, checkup tests, validation tests and recapitulation tests.

Over and over again, they tested us where they had tested us before, mentally, physically, psychologically, always probing for a hair's-breadth of difference, for a third decimal place of advantage.

And then, when we had reached the point where our reflexes had become edgy, where our dreams were eight hours' worth of raising, flying and landing the ship, where we chewed bread in the mess-hall with the certain feeling that somewhere a stopwatch must be recording, the pressure came off abruptly.

And the results were announced.

I WAS first, by a millimicron. Bresh was second, by the same distance. Then came McGuire, Caldicott and Stefano.

I was first!

I would pilot the first ship to the Moon! I would be the new Columbus! I would start the era of space travel!

We didn't know who had invented the first crude tool, who had taken the first bareback ride

on a horse, but as long as human history endured, the name of the first man to leave Earth and land on another world would be celebrated. And it would be my name — Emanuel Mengild.

I felt like the ten-year-old kid who is suddenly told, all right, tomorrow he can go out West and become a cowboy — like the man lying on a flophouse bed who opens a telegram informing him he's just inherited a million dollars — like the crackle-fingered, red-eyed seamstress who's invited to go out to Hollywood and become a film star. But much more than all of those, for someone of my generation and background, I would pilot the first Moon ship!

There were consolation prizes given out, too. If I dropped dead in the next week, or went crazy and refused to go, Bresh would be up. After him, of course, McGuire, Caldicott and Stefano, in that order. The way they looked at me!

When I got the order to report to Colonel Graves, the Commandant of the Station, I swaggered all the way into his office. I wasn't throwing any weight around. I just felt exactly that way.

Any time up to today that his eye fell on me, I'd pulled my shoulders back a little further, put a little extra snap into my step. As Commandant, he was a member of the testing board, and, for all I knew, the decisive one.

There was always the possibility that he might notice me yawning a bit longer after breakfast than the others, that he might put that one extra question mark beside my name that would just make a vital difference.

But now! Now he was simply George Johnstown Graves, a super-annuated rocket pilot from the old days when men had thought it exciting to climb high enough to see the Earth as a curving horizon beneath. He was courageous enough and smart enough and fast enough, but he'd been born a mite too early. For all his rank, he was just a Portuguese fisherman, while I — well, as I said, I was Columbus.

HE WAS middle height, a bit taller than me, and he was leaning back in his swivel chair with his collar open, his sleeves rolled up and a funny, faraway look in his eyes which I interpreted as envy.

I sat down alertly in the chair he nodded at.

He said "Um" at the opposite wall, as if he were agreeing with it. Then he looked at me.

"Mengild," he said, "you're engaged, aren't you? A Miss Rass?"

"Yes, sir," I told him snappily. The five of us were all civilians, but we'd gotten in the habit of saying "sir" to everyone, even the people who made up our beds.

How did you know who would be contributing to the final, crucial decision?

He glanced flittingly across his desktop. The desktop held a single folderful of papers, but closed. I had the impression that he'd memorized everything in the folder. "You've requested permission to have her enter the Station tonight on a four-hour civilian pass?"

I got a bit uncomfortable. "That's right, sir. When the results were posted, we were told we'd have a thirty-six-hour vacation from classes. We were told we could invite any one outsider to join us for this evening. I got in touch with Irene — Miss Rass — and she's flying down from Des Moines. I hope there's nothing wrong with —"

Colonel Graves shook his head sharply. "Nothing. Nothing wrong, Mengild. You don't expect to marry the lady before you take off, do you?"

"No-o-o. We'd pretty much set it up the other way, sir. That is, if I were picked and I got back in one piece, we'd do it the day I landed back on Earth. She sort of wanted to get married first, but I talked her out of it."

"She knows your chances of return in one piece are only slightly better than fifty per cent?"

I felt relieved. I thought I understood what he was driving at.

"Yes, sir. But she still wants me to go. She knows how I've grown up with the idea. Irene wouldn't want it any differently."

The colonel folded his hands under his chin and stared straight at me. "Miss Rass is a domestic type, isn't she? Wants the usual things — a home, babies, so on?"

"I guess so. She's a pretty normal girl."

"You want them, too?"

I looked off to one side and thought for a moment. "Well, sir, I've wanted one thing since I was a kid and another for the past three years — space flight and Irene. And whatever Irene wants in the way of a home, once I'm back, once I've made it, I guess I want that as well."

He examined the opposite wall again. When he got its opinion, he started talking at it in a low, soft voice. Didn't sound military at all.

ee ALL right. I'll put it to you very briefly, Mengild. As you know, your engines are atomics and they have to be shielded. They are. Out in space, cosmic rays stream into the ship and it has to be shielded from them. It is. Thus far, except for a few unfortunate and preventable accidents, we've had no trouble on this matter. The shielding we've devised is good and it works. But this will be the longest trip that



a man has taken under these conditions and the very latest poop from the lab is that the shielding, in all likelihood, will not be effective for its duration."

My lips suddenly weren't working too well. "Does this mean, sir, that —"

"It means that the pilot of the first Earth-Moon ship will probably be completely sterilized somewhere on the return journey. We could improve the shielding and no doubt will — in the future. To do it now would mean a long delay at best. At worst, it might mean completely redesigning and rebuilding the ship, which, as you know, has been figured for pretty close tolerances in terms of the equipment it can carry and the fuel it must carry. Our decision is therefore not to delay, but to put it up to the individual most concerned."

I thought it out for just a moment, for one psyche-churning moment. "I can give you my answer right now, sir. I've spent too much of my life dreaming of —"

He said "Um" to the wall once more. "Suppose you take twenty-four hours. We can wait till then. Talk it over with your girl, try to find out exactly how you feel."

"I know exactly how I feel, sir. There's nothing more important to me than this trip. And Irene will agree with me. If she doesn't — well, as I said, there's nothing

more important than this trip. Why, do you think — do you think, sir, that after having come all this way, I'd let any risk, any risk at all, get in the way of my being the first man to make it to the Moon and back?"

You can imagine that I was pretty excited. But Colonel Graves knotted his tie and rolled down his sleeves and said firmly to the wall: "Suppose you take twenty-four hours, Mengild."

The moment I got out of his office, I understood what he meant. Irene was due tonight. I wasn't due to take off for close to three weeks. Plenty of time to get married, the way Irene had wanted to in the first place, and get a baby started.

Of course. That's what Colonel Graves had meant.

Bresh and McGuire were standing outside the administration building when I came down. They looked at me with carefully controlled eagerness.

"No," I told them, "it hasn't been suddenly discovered that my grandfather took sick on his first airplane ride. I still go."

Bresh socked his forehead with a thumb-knuckle, just under his spiky red hair. "Well," he grinned, "can you blame a guy for hoping?"

I pushed between the death watch with both hands, on my way to my quarters to shower

and shave. I had to go through the same routine there with Caldicott and Stefano, although, being lower on the list, they were less grisly.

WHEN Irene arrived at the gate in the sand-streaked taxi, I hauled her into my arms and let her soak there for a while. She looked so good, she felt so good!

We had a quickish snack at the recreation hall, while she filled me in on her mother's sciatica and her kid brother Lennie's art scholarship. Then she grabbed my hand and congratulated me on being selected for the Earth-Moon ship.

"Let me show you what it looks like," I suggested. "The next time you see it, it will be on the newscasts when I take off."

Irene glanced around as we left the rec hall. She pointed her little chin at the swarm of lab buildings rising in concrete squareness from the raw Arizona earth, at the guards pacing their intervals along the wire fence.

"Such a—" she thought for a moment — "such a *male* place."

I laughed. "What else should it be?"

She came in on the tail end of my laugh. "What else?" she repeated.

It was getting dark by the time we reached the ship. Irene gave a

tiny and thoroughly feminine grunt of admiration. The ship stood on its tail, staring greedily, unswervingly at the enormous sky above. The lights from the station covered its sides with long thin glints and long thin shadows that seemed to be urging it to move, move, **MOVE!**

"The first one," she breathed. "And you're going to pilot it."

I figured it was exactly the right time. So I hoisted her up on the steps that led to the pilot's hatch, lit a cigarette for her — and started talking.

It took a surprisingly short time, even including the proposal. She had barely smoked one-third of the cigarette when I finished. But she kept on smoking the rest in quiet, long inhalations until it became a butt that burned her fingers and she had to throw it away.

I ground the butt into the sand and said, "Well?"

Her next words kind of astonished me. "Well what?"

"Well, we're going to get married, aren't we? Right away?"

"No, we're not," she said.

"Irene! But when I come back, I may not be able to have children. You want to have children, don't you?"

A LONG pause. I wished it wasn't so dark: I couldn't see her face. "Yes, I want to have

children. That's why we won't get married. Not before you go or after you come back."

I felt like saying *Oh, no!* I felt like grabbing her and squeezing her until she was my sensible, lovable, loving Irene again. Instead, I stepped back away from her. I gave up talking and thought for a while.

"Look," I said at last. "Correct me if I'm wrong. You knew the risks I was running when I volunteered for this flight and you were with me all the way. You knew what it meant to me. You were willing to take the chance that I might not come back, and that if I did, it would be in three separate paper bags. This business is just some more of the same."

"No, it isn't." I could tell from her voice that she was crying. "I wasn't happy about the risks, but I knew you had to do it. You've been preparing for this moment since you were a little boy. But this — this is different, Mannie."

"How is it different? How?"

She wiped the sniffles off her nose-tip. "It's different, that's all. Maybe a man just can't understand these things. But it's different, altogether different for a woman."

"Baby, darling," I said, trying to take her in my arms, but she made a little away movement and I stopped. "I want to have a

child. I want to have a child with you. Will you please tell me why we can't get married tonight, tomorrow, as soon as we can, and start a baby?"

"Suppose I don't get pregnant before you leave? And if I do — suppose I have a miscarriage?"

"Listen, Irene," I told her desperately. "In my position, we could have the best doctors in the world taking care of you. And if anything went wrong, we could adopt a baby. I know it isn't the same, but for all we know, one of us might be sterile to begin with! Lots of couples adopt babies and they're happy."

"Oh, Mannie, it wouldn't be the same thing with us, not if we started out this way. Besides, miscarriages, that sort of thing, that's not the real reason."

I put my fists on my hips and shoved my face close to hers. "Well, will you kindly stop all this, woman, and tell me the real reason?"

She asked me for another cigarette. I lit it up and handed it to her.

"Mannie, I don't know if you can understand this, but I'll try. I wouldn't want to limit my child-bearing powers in advance. And — I wouldn't want to marry a man who would deliberately give up his ability to become a father. He'd never be completely a man to me."

THAT took some absorption. "What would you think of a man," I asked slowly, "who gave up his ability to make the kind of trip I've been offered? Would he be completely a man?"

"I don't *know*," she said, crying again. "But I don't think they're the same thing. I don't—I don't—and that's all!"

"But that's what you're asking me to do, Irene," I pointed out. "You're asking me to give up a dream that I've had since I was a—"

"I'm not asking you to do a single thing, Emanuel Mengild! I'm only telling you what I can and can't do. *I*, not *you*. You—you can go straight up in a rocket!"

And that's where we left it. I walked her back, walked her around, and, when her time was up, I walked her to the gate. We didn't hug when she left; we didn't even blow kisses at each other. I just stared after the cab until it sand-clouded around a big boulder and disappeared.

Then I walked myself around.

One way to look at it: I was in one Earth-Moon trip and out one woman. Rack up Fame and Fortune, scratch Family.

One way to look at it.

Another way: I could get mad at Irene for failing me at a crucial moment, for leaving when the going got rough. I got mad.

Then I got over it.

After all, I could see her point. It *wasn't* the same for a man as for a woman. A man had his work, his achievement; a woman had children. A woman grew up with the dream of kids the way I'd grown up with the dream of the stars. It wasn't the same for a man.

But wasn't it? I began to realize, walking myself around and around in a plodding, sweaty circle, how much I had counted on Irene to come through for me. I wanted kids—only I'd never said to myself two kids, five kids. I'd settle for one.

But no kids? Ever?

I'd taken it for granted, I now understood, when Colonel Graves had hit me with the problem, that Irene loved me enough to marry me right away and cancel out the chance of having no family. That's why I'd been so sure. That had been the little nubbin of security nestling comfortably at the back of my mind.

This, now, was a different matter.

IT HAD taken a couple of billion years to produce me. In that couple of billion years, I had millions upon millions of ancestors. Slimelike ancestors, jelly-like ancestors, water-breathing ancestors, air-breathing ancestors, ancestors that floated, that swam,

that crawled, that ran, that climbed, that finally walked. And all those ancestors, no matter how different, had one thing in common.

They had survived long enough to have descendants. Other species didn't and their lines were extinct, bare bones in rock strata. But no matter how scarce food got, no matter what enemies they faced, what unprecedented natural upheavals they had to adjust to, my ancestors somehow managed to pull through and have offspring. That's how I happen to be here.

If I didn't carry on, all their effort would come to nothing: I would be a biological dead-end. They might just as well not have bothered.

BUT that was only part of it, I decided, coming to the gate for the tenth time and starting off again.

What was it all about, for example? What was I here for? What was good, what was bad, what was right, what was wrong? What in the world was I sure of, with all my studies, with all my aspirations, with all my attitudes? Very damn little.

But while life continued, there was a chance of finding out, of getting a little closer, all the time a little closer. And my kind of life — me — could only find out if it went on.

It was like, I decided, my entering this competition for the Moon ship. I'd entered it partly because I wanted to very badly, but also because I felt I was the right man. I possessed inside me, I believed, the values necessary to make that difficult attempt which would initiate the age of interplanetary travel. Well, relative to life, I felt I was the right man, too. Both were conceits, but they were *fundamental* conceits. If I felt I was good enough, of value enough, I could not withdraw my entry.

That got me to the Moon ship. Life wasn't just reproduction — not human life. Life was achievement, too. Mankind pushed its collective nose past barrier after barrier, because one of its component individuals just *had* to, whether or not he reproduced. And I lived in a time of a major barrier and it had fallen to my lot to do the pushing. Wasn't that more important than children?

On the other hand, I couldn't fool myself — any of the other four men who had come out to the Station with me could do the job as well as I. And if this ship didn't make it, another would. I wasn't that necessary.

But I *wanted* to be.

So there I was, back again. I waved to the guard at the gate and kept going. By now, I'd worn a path for myself.

MY MOUTH felt as if it were full of wet splinters that had fallen out of my eyes when I reported to Colonel Graves the next morning. He stared at my face with a good deal of interest as I sat down.

"It wasn't so easy, was it, Mengild?"

"No, sir," I told him unhappily, "it wasn't. But I've made up my mind. And I'll stick to the decision."

He waited.

"I've decided—maybe I'll regret this for the rest of my life, but, as I said, I stick by it—I've decided not to go."

"Um. The sterilization business?"

"Yes, sir."

"I take it the young lady said no."

I wiped my face with my wet handkerchief and shrugged. "She said no, all right, but that wasn't it. I thought it over all night and this is my personal decision. I'd rather have children than have the Moon ship."

He rocked back and forth in his chair. "You know, Mengild, there's such a thing as artificial insemination. And you still could be the father by being a donor before the takeoff."

"I can see myself," I muttered, "running around with a test tube in my hand, trying to get women to marry me."

"Well, when you put it that way, I'll admit it isn't too romantic. However, there are women who would. Remember, Mengild, you'd be a hero, one of the greatest heroes of all time."

"Suppose it worked," I challenged. "Suppose I got married—to one of those women who would—and she were artificially inseminated and I were the father—what then if there were miscarriages? Or abnormal births? The frozen spermatozoa don't remain viable more than a year or two. But that's only part of it, sir. The rest would be that I had voluntarily and forever risked the chance of never becoming an ancestor. I've decided I don't want to."

Colonel Graves stood up. "Your business. And your decision. Certainly. I made these suggestions because, frankly, we would rather have you pilot the ship. You're a shade better than anyone else who competed with you. That would mean a shade better chance for the ship to get to the Moon and return. We want very much to have it return."

They offered the job to the next man in line and he jumped at it. They told him the problem and he laughed. They told him to take twenty-four hours to think it over, and he did, and he came back and said he still wanted to go.

Bresh, of course.

He took off three weeks later, landed on the Moon and returned safely to one of the greatest and most heroic receptions ever. That's why we celebrate Paul Bresh Day all over the Solar System. That's why you reporters are here today for some of the usual human-interest fill-in material.

And I can't tell you anything more than I've told you before.

No, that's not so. There's a new item.

AS YOU know, I never married Irene. I married Frances, a year later, when I got that maintenance crew job. That's all I've ever done for interplanetary travel—keep the ships in good shape for the flight into space. I've made a good living, even made a name for myself as a ground-crew chief. Now, naturally, I'm retired.

I do regret that I never made a space flight when I was younger. Too old now, heart too weak, to be allowed even on one of those

luxury passenger liners.

Not like Paul Bresh. Besides making the first flight to the Moon in history, he was a member of the Second Exploratory Party to Mars; the time he sort of wandered off into the desert and was never heard of again.

Me? All I have now is my son David and his wife in New Quebec on Mars, my daughter Ann and her family on Ganymede, my daughter Mildred and her family on Titan, and—oh, yes, the new item.

I got word last week that when the first star ship lifted from Pluto on its way to Alpha Centaurus, my grandson Aaron and his wife Phyllis were aboard. The trip will take thirty years, they tell me, so I'll probably have a great-grandson born on the way.

There it is, my side of the story. That's what I got out of it. Maybe I didn't become the new Columbus, but I'm an ancestor. Paul Bresh has his day. I have my millenia.

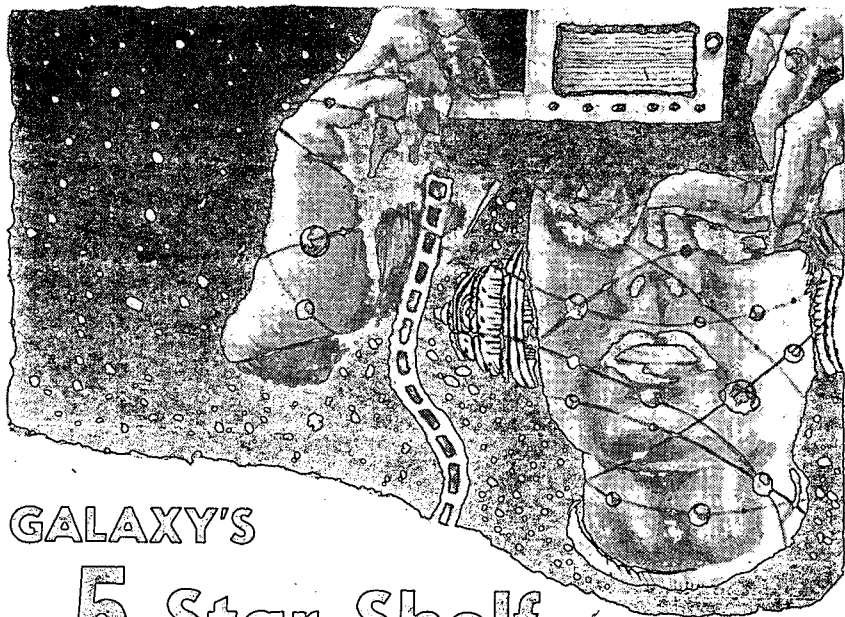
—WILLIAM TENN

Beginning Next Month . . .

WOLFBANE

by Frederik Pohl and C. M. Kornbluth

Earth has been snatched from the Solar System by aliens who neither know nor care that they are dominating the planet! Who are they? What do they want? Can they be fought? **Should** they be fought? As you'd expect, the authors of **Gravy Planet** and **Gladiator at Law** come up with totally unexpected answers. Don't miss WOLFBANE!



GALAXY'S

5 Star Shelf

ONE HALF OF THE WORLD
by James Barlow. Harper, N. Y.,
\$3.50

ALTHOUGH not science fiction in the popular sense, Barlow's book is a taut account of Occupied Britain in 1960. All of Europe except neutral Portugal has been subjugated; the total destruction of London has resulted in England's capitulation.

As an American, I wonder why Barlow ignores the possibility of U.S. intervention.

As the title implies, the world is divided, although there is no

official state of war. The U.S. limits its activity to dropping ammunition along with an occasional multi-clad spy to the Resistance groups. And therein lies the key to the power of this first novel.

On the surface, the English countryside and populace are seemingly as unruffled as ever. Barlow's hero, a plainclothesman in Internal Security, can be forgiven, then, in believing that the entire populace, except for a few traitors, is in accord with the admirable policy of the Occupiers: a comparatively free press, religious freedom, the continuation

of British law, though without loopholes for legal wriggings. He is happy in his job of checking sabotage and treason.

Unfortunately, he is also an idealist and inevitably his conscience, and a teacher in the form of a young girl he has fallen in love with, combine to show him his error.

Despite a cloying romance and a hero almost too good to be true, Barlow's yarn has a frightening reality and urgency comparable to his countryman's masterpiece, 1984.

CYCLE OF FIRE by Hal Clement. Ballantine Books, N. Y., \$2.75

EVERY aficionado knows by now that Clement is the Alien spokesman on Earth. Very few authors can make the extra-terrestrial seem as human as the next-door neighbor — and much more likable.

As in *Needle* and *Iceworld*, Clement interplays the personalities of a juvenile human and a mature alien for intellectual contrast. The boy is a sixteen-year-old cadet who has been left for dead by his shipmates on a world with a weird environment. It circles a red dwarf which, in turn, is captive of a blue giant. During his long trek to the north for relief from heat, Nils Kruger

stumbles on a crashed glider and an alien pilot dying of thirst on an old lava flow. He saves the pilot's life, thereby starting a peculiar misunderstanding.

Due to the knowledge the boy evinces concerning desert cacti, the alien assumes him to be indigenous to the planet, whereas the youth is equally certain that the creature is, like himself, a marooned.

The major portion of the story concerns their odyssey to the Ice Ramparts where the alien, Dar, must take his books. Two facts strike the boy: Dar's refusal to leave his books, and the alien's knowledge of the time of his own death. Equally incomprehensible to Dar is the uncertainty under which Nils must suffer about his death date.

Clement is an adept at making outlandish concepts acceptable and logical. He is also expert at visualizing wonderfully imaginative environments. Sorrowfully, the story talks itself hoarse at the end, so that it falls quite short of *Mission of Gravity*.

THE WINDS OF TIME by Chad Oliver. Doubleday & Co., Inc., N. Y., \$2.95

IN sharp contrast to Hal Clement, Oliver peoples his cosmos with People. Of course, his being an anthropologist is a strong

factor. However, as have many authors before him, he rationalizes the physiological reasons for universal ascendancy of the bipedal man-image. Like Clement's aliens, though, Oliver's aliens are as human as all get-out.

Wes Chase, a doctor on a Rocky Mountain fishing escape from his L.A. practice and an unloving wife, gets kidnapped by a pasty-faced character with a potent hand weapon. He is held captive in a cave containing four bodies in niches while his captor painstakingly absorbs English. From that point on, the story rightly belongs to the Intruders. They're far more interesting than Doc Chase.

They are looking for a world with a spaceship technology and we don't have it. However, there's much more to it than that.

I urge your getting acquainted with as nice a crew of extraterrestrials as can be imagined.

MEETING PREHISTORIC MAN by G. H. R. von Koenigswald. Harper, N. Y., \$3.50

ONE of the most painstaking of the geological sciences is paleontology. In *Man in Search of His Ancestors*, reviewed some months ago, André Senet made a quick round of the various finds concerning the origin of the race. He was able to make it quick

because of the startling paucity of relics.

Von Koenigswald, one of the most eminent authorities, has been instrumental himself in unearthing unique finds in Java, near the site of the discovery by Dubois of *Pithecanthropus erectus*, for years the so-called "Missing Link." Because of a more complete skull dug up by the author, *Pithecanthropus* was found to be a true human. The author's biggest discovery, though, was an even earlier ancestor.

Von Koenigswald has hunted Ancient Man all over Earth, even in the chemists' shops of China where dragon's teeth are to be procured. Some of these turned out to be from *Gigantopithecus*, an eight-foot giant.

An unusual fact tossed out by the author is that there is still less known about the antecedents of the anthropoid apes than about our own — there are greater differences between anthropoids and apes than between anthropoids and men!

COMING ATTRACTIONS, edited by Martin Greenberg. Gnome Press, N. Y., \$3.50.

THE latest in Editor Greenberg's "Adventures in Science Fiction" series is a collection of non-fiction articles, mainly from Asf of the late 'thirties and early

'forties. Several of them, particularly "Language for Time Travelers," by Sprague de Camp and "Geography for Time Travelers" by Willy Ley, have become classics.

Although a goodly portion of them have been penned with tongue in cheek, there is an education to be gained in the reading.

If you can read "Space War" by Ley, "Space War Tactics" by Malcolm Jameson or "Fuel for the Future" by Jack Hatcher without an ounce of incredulity, nothing can surprise you.

MOLEWORTH'S GUIDE TO THE ATOMIC AGE by Geoffrey Willans and Ronald Searle. The Vanguard Press, N. Y., \$2.75

IN actuality, this is not so much a guide as an escape. As numerous psychologists have stated, the only method by which many can come to terms with our modern age is in madness. In other words, there is method in madness, as any who open this book will quickly grant. If the reader is unfamiliar with Searle's art, he should not let it frighten him from the text, for that is equally mad.

Frankly, I don't know what to make of this book, or, for that matter, it of me.

THE HANDBOOK OF ROCKETS AND GUIDED MISSILES by Norman J. Bowman. The Perastadion Press, Illinois, \$6.50

AN authoritative reference book covering rocketry, guided missiles, etc., it contains numerous pages of data tables on individual rockets as well as 170 drawings of all the known types through 1956.

Order direct from the publishers at 10630 S. St. Louis St., Chicago 43.

THE ROAD TO INNER FREEDOM, THE ETHICS by Baruch Spinoza. Philosophical Library, N. Y., \$3.00

THIS famous work until now has been available only in its original form. Since Spinoza hid his ideas in mathematical formulation through fear of religious persecution, *The Ethics* has been difficult reading. Dr. D. D. Runes has edited it to readability and supplied a stirring introduction.

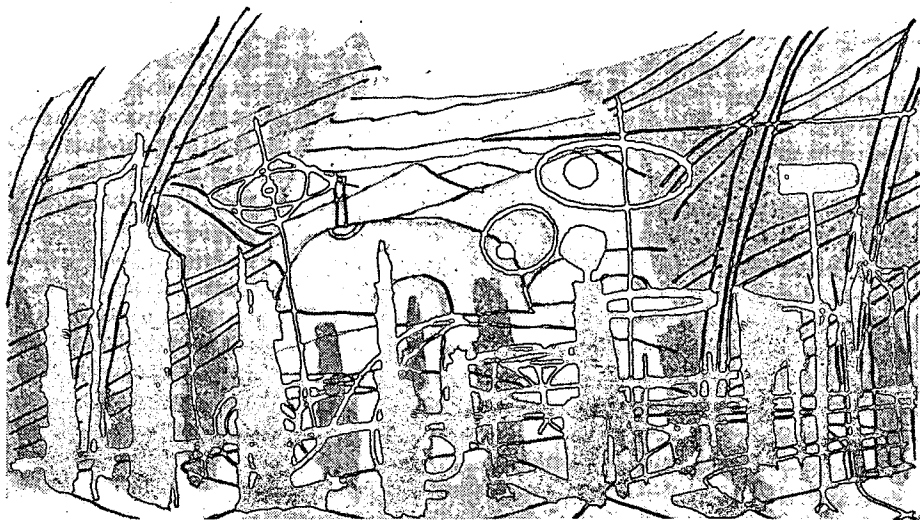
—FLOYD C. GALE



Shadow World

Of all the upsetting phenomena in the whole Galaxy, the most alarming was this: I had a little Shadow that went in and out with me!

Illustrated by DILLON



I ROLLED out early to put in an hour or so of work on my sector model before Greasy got breakfast slopped together. When I came out of my tent, Benny, my Shadow, was wait-

ing for me. Some of the other Shadows also were standing around, waiting for their humans, and the whole thing, if one stopped to think of it, was absolutely crazy. Except that no one

By **CLIFFORD D. SIMAK**



ever stopped to think of it; we were used to it by now.

Greasy had the cookshack stove fired up and smoke was curling from the chimney. I could hear him singing lustily amid the

clatter of his pans. This was his noisy time. During the entire morning, he was noisy and obnoxious, but toward the middle of the afternoon, he turned mousy quiet. That was when he began

to take a really dangerous chance and hit the peeper.

There were laws which made it very rough on anyone who had a peeper. Mack Baldwin, the project superintendent, would have raised merry hell if he had known that Greasy had one. But I was the only one who knew it. I had found out by accident and not even Greasy knew I knew and I had kept my mouth shut.

I said hello to Benny, but he didn't answer me. He never answered me; he had no mouth to answer with. I don't suppose he even heard me, for he had no ears. Those Shadows were a screwy lot. They had no mouths and they had no ears and they hadn't any noses.

But they did have an eye, placed in the middle of the face, about where the nose would have been if they'd had noses. And that eye made up for the lack of ears and mouth and nose.

It was about three inches in diameter and, strictly speaking, it wasn't built exactly like an eye; it had no iris or no pupil, but was a pool of light and shadow that kept shifting all around so it never looked the same. Sometimes it looked like a bowl of goop that was slightly on the spoiled side, and at other times it was hard and shining like a camera lens, and there were other times when it looked sad and

lonely, like a mournful hound dog's eyes.

THEY were a weird lot for sure, those Shadows. They looked mostly like a rag doll before any one had gotten around to painting in the features. They were humanoid and they were strong and active and I had suspected from the very first that they weren't stupid. There was some division of opinion on that latter point and a lot of the boys still thought of them as howling savages. Except they didn't howl — they had no mouths to howl with. No mouths to howl or eat with, no nose to smell or breathe with, and no ears to hear with.

Just on bare statistics, one would have put them down as plain impossible, but they got along all right. They got along just fine.

They wore no clothes. On the point of modesty, there was no need of any. They were as bare of sexual characteristics as they were of facial features. They were just a gang of rag dolls with massive eyes in the middle of their faces.

But they did wear what might have been a decoration or a simple piece of jewelry or a badge of Shadowhood. They wore a narrow belt, from which was hung a bag or sack in which they carried a collection of trinkets

that jingled when they walked. No one had ever seen what was in those sacks. Cross straps from the belt ran over the shoulders, making the whole business into a simple harness, and at the juncture of the straps upon their chest was mounted a huge jewel. Intricately carved, the jewel sparkled like a diamond, and it might have been a diamond, but no one knew if it was or not. No one ever got close enough to see. Make a motion toward that jewel and the Shadow disappeared.

That's right. Disappeared.

I said hello to Benny and he naturally didn't answer and I walked around the table and began working on the model. Benny stood close behind me and watched me as I worked. He seemed to have a lot of interest in that model. He had a lot of interest in everything I did. He went everywhere I went. He was, after all, my Shadow.

There was a poem that started out: *I have a little shadow . . .* I had thought about it often, but couldn't recall who the poet was or how the rest of it went. It was an old, old poem and I remembered I had read it when I was a kid. I could close my eyes and see the picture that went with the words, the brightly colored picture of a kid in his pajamas, going up a stairs with a candle in his hand and the shadow of

him on the wall beyond the stairs.

I took some satisfaction in Benny's interest in the sector model, although I was aware his interest probably didn't mean a thing. He might have been just as interested if I'd been counting beans.

I WAS proud of that model and I spent more time on it than I had any right to. I had my name, Robert Emmett Drake, spelled out in full on the plaster base and the whole thing was a bit more ambitious than I originally had intended.

I had let my enthusiasm run away with me and that was not too hard to understand. It wasn't every day that a conservationist got a chance to engineer from scratch an absolutely virgin Earth-type planet. The layout was only one small sector of the initial project, but it included almost all the factors involved in the entire tract and I had put in the works—the dams and roads, the power sites and the mill sites, the timber management and the water-conservation features and all the rest of it.

I had just settled down to work when a commotion broke out down at the cookshack. I could hear Greasy cussing and the sound of thudding whacks. The door of the shack burst open and a Shadow came bounding

out with Greasy just a leap behind him. Greasy had a frying pan and he was using it effectively, with a nifty backhand technique that was beautiful to see. He was laying it on the Shadow with every leap he took and he was yelling maledictions that were enough to curl one's hair.

The Shadow legged it across the camp with Greasy close behind. Watching them, I thought how it was a funny thing that a Shadow would up and disappear if you made a motion toward its jewel, but would stay and take the kind of treatment Greasy was handing out with that frying pan.

When they came abreast of my model table, Greasy gave up the chase. He was not in the best of condition.

He stood beside the table and put both fists belligerently on his hips, so that the frying pan, which he still clutched, stood out at a right angle from his body.

"I won't allow that stinker in the shack," he told me, wheezing and gasping. "It's bad enough to have him hanging around outside and looking in the windows. It's bad enough falling over him every time I turn around. I will not have him snooping in the kitchen; he's got his fingers into everything he sees. If I was Mack, I'd put the lug on all of them. I'd run them so fast, so far, that it would take them—"

"Mack's got other things to worry about," I told him rather sharply. "The project is way behind schedule, with all the breakdowns we've been having."

"Sabotage," Greasy corrected me. "That's what it is. You can bet your bottom dollar on that. It's them Shadows, I tell you, sabotaging the machines. If it was left to me, I'd run them clear out of the country."

"It's their country," I protested. "They were here before we came."

"It's a big planet," Greasy said. "There are other parts of it they could live in."

"But they have got a right here. This planet is their home."

"They ain't got no homes," said Greasy.

HE turned around abruptly and walked back toward the shack. His Shadow, which had been standing off to one side all the time, hurried to catch up with him. It didn't look as if it had minded the pounding he had given it. But you could never tell what a Shadow was thinking. Their thoughts don't show on them.

What Greasy had said about their not having any homes was a bit unfair. What he meant, of course, was that they had no village, that they were just a sort of carefree bunch of gypsies, but

to me the planet was their home and they had a right to go any place they wanted on it and use any part of it they wished. It should make no difference that they settled down on no particular spot, that they had no villages and possibly no shelters or that they raised no crops.

Come to think of it, there was no reason why they should raise crops, for they had no mouths to eat with, and if they didn't eat, how could they keep on living and if . . .

You see how it went. That was the reason it didn't pay to think too much about the Shadows. Once you started trying to get them figured out, you got all tangled up.

I sneaked a quick look sideways to see how Benny might be taking this business of Greasy beating up his pal, but Benny was just the same as ever. He was all rag doll.

Men began to drift out of the tents and the Shadows galloped over to rejoin their humans, and everywhere a man might go, his Shadow tagged behind him.

The project center lay there on its hilltop, and from where I stood beside my sector table, I could see it laid out like a blueprint come to life.

Over there, the beginning of the excavation for the administration building, and there the

gleaming stakes for the shopping center, and beyond the shopping center, the ragged, first-turned furrows that in time would become a street flanked by neat rows of houses.

It didn't look much like a brave beginning on a brand-new world, but in a little while it would. It would even now, if we'd not run into so much hard luck. And whether that hard luck could be traced to the Shadows or to something else, it was a thing that must be faced and somehow straightened out.

FOR this was important. Here was a world on which Man would not repeat the ancient, sad mistakes that he had made on Earth. On this, one of the few Earth-like planets found so far, Man would not waste the valuable resources which he had let go down the drain on the old home planet. He'd make planned use of the water and the soil, of the timber and the minerals, and he'd be careful to put back as much as he took out. This planet would not be robbed and gutted as Earth had been. It would be used intelligently and operated like a well-run business.

I felt good, just standing there, looking out across the valley and the plains toward the distant mountains, thinking what a fine home this would be for mankind.

The camp was becoming lively now. Out in front of the tents, the men were washing up for breakfast and there was a lot of friendly shouting and a fair amount of horseplay. I heard considerable cussing down in the equipment pool and I knew exactly what was going on. The machines, or at least a part of them, had gone daffy again and half the morning would be wasted getting them repaired. It certainly was a funny deal, I thought, how those machines got out of kilter every blessed night.

After a while, Greasy rang the breakfast bell and everyone dropped everything and made a dash for it and their Shadows hustled along behind them.

I was closer to the cookshack than most of them and I am no slouch at sprinting, so I got one of the better seats at the big outdoor table. My place was just outside the cookshack door, where I'd get first whack at seconds when Greasy lugged them out. I went past Greasy on the run and he was grumbling and muttering the way he always was at chow, although sometimes I thought that was just a pose to hide his satisfaction at knowing his cooking still was fit to eat.

I got a seat next to Mack, and a second later Rick Thorne, one of the equipment operators, grabbed the place on the other

side of me. Across from me was Stan Carr, a biologist, and just down the table, on the other side, was Judson Knight, our ecologist.

We wasted no time in small talk; we dived into the wheat cakes and the side pork and the fried potatoes. There is nothing in all the Universe like the morning air of Stella IV to hone an edge on the appetite.

Finally we had enough of the edge off so we would waste time being civil.

"It's the same old story again this morning," Thorne said bitterly to Mack. "More than half the equipment is all gummed up. It'll take hours to get it moving."

HE morosely shoveled food into his mouth and chewed with unnecessary savagery. He shot an angry glance at Carr across the table. "Why don't you get it figured out?" he asked.

"Me?" said Carr, in some astonishment. "Why should I be the one to get it figured out? I don't know anything about machines and I don't want to know. They're stupid contraptions at best."

"You know what I mean," said Thorne. "The machines are not to blame. They don't gum up themselves. It's the Shadows and you're a biologist and them Shadows are your business and—"

"I have other things to do,"

said Carr, "I have this earthworm problem to work out, and as soon as that is done, Bob here wants me to run some habit-patterns on a dozen different rodents."

"I wish you would," I said. "I have a hunch some of those little rascals may cause us a lot of trouble once we try our hand at crops. I'd like to know ahead of time what makes the critters tick."

That was the way it went, I thought. No matter how many factors you might consider, there were always more of them popping up from under rocks and bushes. It seemed somehow that a man never quite got through the list.

"It wouldn't be so bad," Thorne complained, "if the Shadows would leave us alone and let us fix the damage after they've done their dirty work. But not them. They breathe down our necks while we're making the repairs, and they've got their faces buried in those engines clear up to their shoulders, and every time you move, you bump into one of them. Someday," he said fiercely, "I'm going to take a monkey wrench and clear some space around me."

"They're worried about what you're doing to their machines," said Carr. "The Shadows have taken over those machines just like they've adopted us."

"That's what you think," Thorne said.

"Maybe they're trying to find out about the machines," Carr declared. "Maybe they gum them up so that, when you go to fix them, they can look things over. They haven't missed a single part of any machine so far. You were telling me the other day it's a different thing wrong every time."

Knight said, solemn as an owl: "I've been doing a lot of thinking about this situation."

"Oh, you have," said Thorne, and the way he said it, you could see he figured that what Knight might think would cut no ice.

"I've been seeking out some motive," Knight told him. "Because if the Shadows are the ones who are doing it, they'd have to have a motive. Don't you think so, Mack?"

"Yeah, I guess so," said Mack.

"FOR some reason," Knight went on, "those Shadows seem to like us. They showed up as soon as we set down and they've stayed with us ever since. The way they act, they'd like us to stay on and maybe they're wrecking the machines so we'll have to stay."

"Or drive us away," Thorne answered.

"That's all right," said Carr, "but why should they want us to

stay? What exactly is it they like about us? If we could only get that one on the line, we might be able to do some bargaining with them."

"Well, I wouldn't know," Knight admitted. "There might be a lot of different reasons."

"Name just three of them," Thorne challenged him nastily.

"Gladly," said Knight, and he said it as if he were slipping a knife into the left side of Thorne's gizzard. "They may be getting something from us, only don't ask me what it is. Or they may be building us up to put the bite on us for something that's important. Or they may be figuring on reforming us, although just what's in us they object to, I can't faintly imagine. Or they may worship us. Or maybe it's just love."

"Is that all?" asked Thorne.

"Just a start," said Knight. "They may be studying us and they may need more time to get us puzzled out. They may be prodding us to get some reactions from us —"

"Studying us!" yelled Thorne, outraged. "They're just lousy savages!"

"I don't think they are," Knight replied.

"They don't wear any clothes," Thorne thundered, slamming the table with his fist. "They don't have any tools. They don't have a village. They don't know how

to build a hut. They don't have any government. They can't even talk or hear."

I was disgusted with Thorne.

"Well, we got that settled," I said. "Let's go back to work."

I got up off the bench, but I hadn't gone more than a step or two before a man came pounding down from the radio hut, waving a piece of paper in his hand. It was Jack Pollard, our communications man, who also doubled in brass as an electronics expert.

"Mack!" he was hollering. "Hey, Mack!"

Mack lumbered to his feet.

Pollard handed him the paper. "It was coming in when Greasy blew the horn," he gasped. "I was having trouble getting it. Relayed a long way out."

MACK read the paper and his face turned hard and red.

"What's the matter, Mack?" I wanted to know.

"There's an inspector coming out," he said, and he choked on each and every word. He was all burned up. And maybe scared as well.

"Is it likely to be bad?"

"He'll probably can the lot of us," said Mack.

"But he can't do that!"

"That's what you think. We're six weeks behind schedule and this project is hotter than a pile. Earth's politicians have made a

lot of promises, and if those promises don't pay off, there'll be hell to pay. Unless we can do something and do it fast, they'll bounce us out of here and send a new gang in."

"But considering everything, we haven't done so badly," Carr said mildly.

"Don't get me wrong," Mack told him. "The new gang will do no better, but there has to be some action for the record and we're the ones who'll get it in the neck. If we could lick this breakdown business, we might have a chance. If we could say to that inspector: 'Sure, we've had a spot of trouble, but we have it licked and now we're doing fine—' if we could say that to him, then we might save our hides."

"You think it's the Shadows, Mack?" asked Knight.

Mack reached up and scratched his head. "Must be them. Can't think of anything else."

Somebody shouted from another table: "Of course it's them damn Shadows!"

The men were getting up from their seats and crowding around.

Mack held up his hands. "You guys get back to work. If any of you got some good ideas, come up to the tent and we'll talk them over."

They started jabbering at him.

"Ideas!" Mack roared. "I said ideas! Anyone that comes up

without a good idea, I'll dock him for being off the job."

They quieted down a little.

"And another thing," said Mack. "No rough stuff on the Shadows. Just go along the way we always have. I'll fire the man who strong-arms them."

He said to me: "Let's go."

I followed him, and Knight and Carr fell in beside me. Thorne didn't come. I had expected that he would.

INSIDE Mack's tent, we sat down at a table littered with blueprints and spec sheets and papers scribbled with figures and offhand diagrams.

"I suppose," said Carr, "that it has to be the Shadows."

"Some gravitational peculiarity?" suggested Knight. "Some strange atmospheric condition? Some space-warping quality?"

"Maybe," said Mack. "It all sounds a bit far-fetched, but I'm ready to grab any straw you shove at me."

"One thing that puzzles me," I put in, "is that the survey crew didn't mention Shadows. Survey believed the planet was uninhabited by any sort of intelligence. It found no signs of culture. And that was good, because it meant the project wouldn't get all tangled up with legalities over primal rights. And yet the minute we landed, the Shadows came gal-

loping to meet us, almost as if they'd spotted us a long way off and were waiting for us to touch down."

"Another funny thing," said Carr, "is how they paired off with us — one Shadow to every man. Like they had it all planned out. Like they'd married us or something."

"What are you getting at?" growled Mack.

I said: "Where were the Shadows, Mack, when the survey gang was here? Can we be absolutely sure they're native to this planet?"

"If they aren't native," demanded Mack, "how did they get here? They have no machines. They haven't even got tools."

"There's another thing about that survey report," said Knight, "that I've been wondering about. The rest of you have read it —"

We nodded. We had not only read it, we had studied and digested it. We'd lived with it day and night on the long trip out to Stella IV.

"The survey report told about some cone-shaped things," said Knight. "All sitting in a row, as if they might be boundary markers. But they never saw them except from a long way off. They had no idea what they were. They just wrote them off as something that had no real significance."

"They wrote off a lot of things as having no significance," said Carr.

"We aren't getting anywhere," Mack complained. "All we do is talk."

"If we could talk to the Shadows," said Knight, "we might be getting somewhere."

"**B**UT we can't!" argued Mack. "We tried to talk to them and we couldn't raise a ripple. We tried sign language and we tried pantomime and we filled reams of paper with diagrams and drawings and we got exactly nowhere. Jack rigged up that electronic communicator and he tried it on them and they just sat and looked at us, all bright and sympathetic, with that one big eye of theirs, and that was all there was. We even tried telepathy —"

"You're wrong there, Mack," said Carr. "We didn't try telepathy, because we don't know a thing about it. All we did was sit in a circle, holding hands with them and thinking hard at them. And of course it was no good. They probably thought it was just a game."

"Look," pleaded Mack, "that inspector will be here in ten days or so. We have to think of something. Let's get down to cases."

"If we could run the Shadows off somehow," said Knight. "If

we could scare them away —”

“You know how to scare a Shadow?” Mack asked, “You got any idea what they might be afraid of?”

Knight shook his head.

“Our first job,” said Carr, “is to find out what a Shadow is like. We have to learn what kind of animal he is. He’s a funny kind, we know. He doesn’t have a mouth or nose or ears . . .”

“He’s impossible,” Mack said. “There ain’t no such animal.”

“He’s alive,” said Carr, “and doing very well. We have to find out how he gets his food, how he communicates, what tolerances he may have, what his responses are to various kinds of stimuli. We can’t do a thing about the Shadows until we have some idea of what we’re dealing with.”

Knight agreed with him. “We should have started weeks ago. We made a stab at it, of course, but our hearts were never in it. We were too anxious to get started on the project.”

Mack said bitterly: “Fat lot of good it did us.”

“Before you can examine one, you have to have a subject,” I answered Knight. “Seems to me we should try to figure out how to catch a Shadow. Make a sudden move toward one and he disappears.”

But even as I said it, I knew that was not entirely right. I

remembered how Greasy had chased his Shadow from the cook shack, lamming him with the frying pan.

And I remembered something else and I had a hunch and got a big idea, but I was scared to say anything about it. I didn’t even, for the moment, dare to let on to myself I had it.

“We’d have to take one by surprise somehow and knock him out before he had a chance to disappear,” Carr said. “And it has to be a sure way, for if we try it once and fail we’ve put the Shadows on their guard and we’ll never have another chance.”

MACK warned, “No rough stuff. You can’t go using violence until you know your critter. You don’t do any killing until you have some idea how efficiently the thing that you are killing can up and kill you back.”

“No rough stuff,” Carr agreed. “If a Shadow can bollix up the innards of some of those big earthmovers, I wouldn’t like to see what he could do to a human body.”

“It’s got to be fast and sure,” said Knight, “and we can’t even start until we know it is. If you hit one on the head with a baseball bat, would the bat bounce or would you crush the Shadow’s skull? That’s about the way it would be with everything we

could think of at the moment."

Carr nodded. "That's right. We can't use gas, because a Shadow doesn't breathe."

"He might breathe through his pores," said Knight.

"Sure, but we'd have to know before we tried using gas. We might jab a hypo into one, but what would you use in the hypo? First you'd have to find something that would knock a Shadow out. You might try hypnotism—"

"I'd doubt hypnotism," said Knight.

"How about Doc?" I asked. "If we could knock out a Shadow, would Doc give him a going over? If I know Doc, he'd raise a lot of hell. Claim the Shadow was an intelligent being and that it would be in violation of medical ethics to examine one without first getting its consent."

"You get one," Mack promised grimly, "and I'll handle Doc."

"He'll do a lot of screaming."

"I'll handle Doc," repeated Mack. "This inspector is going to be here in a week or so—"

"We wouldn't have to have it all cleared up," said Knight. "If we could show the inspector that we had a good lead, that we were progressing, he might play ball with us."

I was seated with my back to the entrance of the tent and I heard someone fumbling with the canvas.

Mack said: "Come in, Greasy. Got something on your mind?"

Greasy walked in and came up to the table. He had the bottom of his apron tucked into his trouser band, the way he always did when he wasn't working, and he held something in his hand. He tossed it on the table.

It was one of the bags that the Shadows carried at their belts!

We all sucked in our breath and Mack's hair fairly stood on end.

"Where did you get this?" he demanded.

"Off my Shadow, when he wasn't looking."

"When he wasn't looking!"

"Well, you see, it was this way, Mack. That Shadow is always into things. I stumble over him everywhere I go. And this morning he had his head halfway into the dishwasher and that bag was hanging on his belt, so I grabbed up a butcher knife and just whacked it off."

AS Mack got up and pulled himself to his full height, you could see it was hard for him to keep his hands off Greasy.

"So that was all you did," he said in a low, dangerous voice.

"Sure," said Greasy. "There was nothing hard about it."

"All you've done is spill the beans to them! All you've done is made it almost impossible —"

"Maybe not," Knight interrupted in a hurry.

"Now that the damage has been done," said Carr, "we might as well have a look. Maybe there's a clue inside that bag."

"I can't open it," grumbled Greasy. "I tried every way I know. There's no way to open it."

"And while you were trying to open it," asked Mack, "what was the Shadow doing?"

"He didn't even notice. He had his head inside that washer. He's as stupid as —"

"Don't say that! I don't want anyone thinking a Shadow's stupid. Maybe they are, but there's no sense believing it until we're sure."

Knight had picked up the bag and was turning it around and around in his hand. Whatever was inside was jingling as he turned and twisted it.

"Greasy's right," he said. "I don't see any way to get it open."

"You get out of here!" Mack roared at Greasy. "Get back to your work. Don't you ever make another move toward any of the Shadows."

Greasy turned around and left, but he was no more than out of the tent when he gave a yelp that was enough to raise your scalp.

I almost knocked the table over getting out of there to see what was going on.

What was happening was no

more than plain solemn justice.

Greasy was running for all he was worth, and behind him was the Shadow with a frying pan, and every jump that Greasy took, the Shadow let him have it, and was every bit as good with that frying pan as Greasy was.

Greasy was weaving and circling, trying to head back for the cookshack, but each time the Shadow got him headed off and went on chasing him.

Everyone had stopped work to watch. Some of them were yelling advice to Greasy and some of the others were cheering on the Shadow. I'd have liked to stay and watch, but I knew that if I was going to put my hunch into execution, I'd never have a better chance to do it.

So I turned and walked swiftly down the street to my own tent and ducked inside and got a specimen bag and came out again.

I saw that Greasy was heading for the equipment pool and that the Shadow still was one long stride behind. Its arm was holding up well, for the frying pan never missed a lick.

I RAN down to the cookshack and, at the door, I stopped and looked back. Greasy was shinnying up the derrick of a shovel and the Shadow was standing at the bottom, waving the frying pan as though daring him to

come down and take it like a man. Everyone else was running toward the scene of action and there was no one, I was sure, who had noticed me.

So I opened the cookshack door and stepped inside.

The dishwasher was chugging away and everything was peaceable and quiet.

I was afraid I might have trouble finding what I was looking for, but I found it in the third place I looked — underneath the mattress on Greasy's bunk.

I pulled the peeper out and slipped it in the bag and got out of there as fast as I could go.

Stopping at my tent, I tossed the bag into a corner and threw some old clothes over it and then went out again.

THE commotion had ended.

The shadow was walking back toward the cookshack, with the pan tucked underneath its arm, and Greasy was climbing down off the shovel. The men were all gathered around the shovel, making a lot of noise, and I figured that it would take a long, long time for Greasy to live down what had happened. Although, I realized, he had it coming to him.

I went back into Mack's tent and found the others there. All three of them were standing beside the table, looking down at

what lay there upon the surface.

The bag had disappeared and had left behind a little pile of trinkets. Looking at the pile, I could see that they were miniatures of frying pans and kettles and all the other utensils that Greasy worked with. And there, half protruding out of the pile, was a little statuette of Greasy.

I reached out a hand and picked up the statuette. There was no mistaking it — it was Greasy to a T. It was made of some sort of stone, as if it might have been a carving, and was delicate beyond all belief. Squinting closely, I could even see the lines on Greasy's face.

"The bag just went away," said Knight. "It was lying here when we dashed out, and when we came back, it was gone and all this junk was lying on the table."

"I don't understand," Carr said.

And he was right. None of us did.

"I don't like it," Mack said slowly.

I didn't like it, either. It raised too many questions in my head and some of them were resolving into some miserable suspicions.

"They're making models of our stuff," said Knight. "Even down to the cups and spoons."

"I wouldn't mind that so much," Carr said. "It's the model of Greasy that gives me the jitters."

"**N**OW let's sit down," Mack told us, "and not go off on any tangents. This is exactly the sort of thing we could have expected."

"What do you mean?" I prompted.

"What do we do when we find an alien culture? We do just what the Shadows are doing. Different way, but the same objective. We try to find out all we can about this alien culture. And don't you ever forget that, to the Shadows, we're not only an alien culture, but an *invading* alien culture. So if they had any sense at all, they'd make it their business to find out as much about us as they could in the shortest time."

That made sense, of course. But this making of models seemed to be carrying it beyond what was necessary.

And if they had made models of Greasy's cups and spoons, of the dishwasher and the coffee pot, then they had other models, too. They had models of the earthmovers and the shovels and the dozers and all the rest of it. And if they had a model of Greasy, they had models of Mack and Thorne and Carr and all the rest of the crew, including me.

Just how faithful would those models be? How much deeper would they go than mere external appearances?

I tried to stop thinking of it,

for I was doing little more than scaring myself stiff.

But I couldn't stop. I went right on thinking.

They had been gumming up equipment so that the mechanics had to rip the machines all apart to get them going once again. There seemed no reason in the world why the Shadows should be doing that, except to find out what the innards of those machines were like. I wondered if the models of the equipment might not be faithful not only so far as the outward appearance might go, but faithful as well on the most intricate construction of the entire machine.

And if that was true, was that faithfulness also carried out in the Greasy statuette? Did it have a heart and lungs, blood vessels and brain and nerve? Might it not also have the very essence of Greasy's character, the kind of animal he was, what his thoughts and ethics might be?

I don't know if, at that very moment, the others were thinking the same thing, but the looks on their faces argued that they might have been.

Mack put out a finger and stirred the contents of the pile, scattering the miniatures all about the tabletop.

Then his hand darted out and picked up something and his face went red with anger.

Knight asked: "What is it, Mack?"

"A peeper!" said Mack, his words rasping in his throat. "There's a model of a peeper!"

ALL of us sat and stared and I could feel the cold sweat breaking out on me.

"If Greasy has a peeper," Mack said woodenly, "I'll break his scrawny neck."

"Take it easy, Mack," said Carr.

"You know what a peeper is?"

"Sure, I know what a peeper is."

"You ever see what a peeper does to a man who used one?"

"No, I never did."

"I have." Mack threw the peeper model back on the table and turned and went out of the tent. The rest of us followed him.

Greasy was coming down the street, with some of the men following along behind, kidding him about the Shadow treeing him.

Mack put his hands on his hips and waited.

Greasy got almost to us.

"Greasy!" said Mack.

"Yes, Mack."

"You hiding out a peeper?"

Greasy blinked, but he never hesitated. "No, sir," he said, lying like a trooper. "I wouldn't rightly know one if somebody should point it out to me. I've heard of them, of course."

"I'll make a bargain with you,"

said Mack. "If you have one, just hand it over to me and I'll bust it up and fine you a full month's wages and that's the last that we'll say about it. But if you lie to me and we find you have one hidden out, I'll can you off the job."

I held my breath. I didn't like what was going on and I thought what a lousy break it was that something like this should happen just when I had swiped the peeper. Although I was fairly sure that no one had seen me sneak into the cookshack—at least I didn't think they had.

Greasy was stubborn. He shook his head. "I haven't got one, Mack."

Mack's face got hard. "All right. We'll go down and see."

He headed for the cookshack and Knight and Carr went along with him, but I headed for my tent.

It would be just like Mack, when he didn't find the peeper in the cookshack, to search the entire camp. If I wanted to stay out of trouble, I knew, I'd better be zipping out of camp and take the peeper with me.

BENNY was squatted outside the tent, waiting for me. He helped me get the roller out and then I took the specimen bag with the peeper in it and stuffed it in the roller's carrying bag. I got on the roller and Benny

jumped on the carrier behind me and sat there showing off, balancing himself — like a kid riding a bicycle with no hands.

"You hang on," I told him sharply. "If you fall off this time, I won't stop to pick you up."

I am sure he didn't hear me, but however that may be, he put his arms around my waist and we were off in a cloud of dust.

Until you've ridden on a roller, you haven't really lived. It's like a roller coaster running on the level. But it is fairly safe and it gets you there. It's just two big rubber doughnuts with an engine and a seat and it could climb a barn if you gave it half a chance. It's too rambunctious for civilized driving, but it is just the ticket for an alien planet.

We set off across the plain toward the distant foothills. It was a fine day, but for that matter, every day was fine on Stella IV. It was an ideal planet, Earth-like, with good weather nearly all the time, crammed with natural resources, free of vicious animal life or deadly virus — a planet that virtually pleaded for someone to come and live on it.

And in time there'd be people here. Once the administration center was erected, the neat rows of houses had been built, once the shopping center had been installed, the dams built, the power plant completed — then there would be people. And in the

years to come, sector by sector, project community by community, the human race would spread across the planet's face. But it would spread in an orderly progression.

Here there would be no ornery misfits slamming out on their own, willy-nilly, into the frontier land of wild dream and sudden death; no speculators, no strike-it-rich, no go-for-broke. Here there would be no frontier, but a systematic taking over. And here, for once, a planet would be treated right.

But there was more to it than that, I told myself.

If Man was to keep going into space, he would have to accept the responsibility of making proper use of the natural resources that he found there. Just because there might be a lot of them was no excuse for wasting them. We were no longer children and we couldn't gut every world as we had gutted Earth.

By the time an intelligence advances to a point where it can conquer space, it must have grown up. And now it was time for the human race to prove that it was adult. We couldn't go ravaging out into the Galaxy like a horde of greedy children.

Here on this planet, it seemed to me, was one of the many proving grounds on which the race of Man must stand and show its worth.

YET if we were to get the job done, if we were to prove anything at all, there was another problem that first must be met and solved. If it was the Shadows that were causing all our trouble, then somehow we must put a stop to it. And not merely put a stop to it, but understand the Shadows and their motives. For how can anybody fight a thing, I asked myself, that he doesn't understand?

And to understand the Shadows, we'd agreed back in the tent, we had to know what kind of critters they might be. And before we could find that out, we had to grab off one for examination. And that first grab had to be perfect, for if we tried and failed, if we put them on their guard, there'd be no second chance.

But the peeper, I told myself, might give us at least one free try. If I tried the peeper and it didn't work, no one would be the wiser. It would be a failure that would go unnoticed.

Benny and I crossed the plain on the roller and headed into the foothills. I made for a place that I called the Orchard, not because it was a formal orchard, but because there were a lot of fruit-bearing trees in the areas. As soon as I got around to it, I was planning to run tests to see if any of the fruit might be fit for human food.

We reached the Orchard and I parked the roller and looked around. I saw immediately that something had happened. When I had been there just a week or so before, the trees had been loaded with fruit and it seemed to be nearly ripe, but now it all was gone.

I peered underneath the trees to see if the fruit had fallen off and it hadn't. It looked for all the world as if someone had come in and picked it.

I wondered if the Shadows had done the picking, but even as I thought it, I knew it couldn't be. The Shadows didn't eat.

I didn't get the peeper out right away, but sat down beneath a tree and sort of caught my breath and did a little thinking.

From where I sat, I could see the camp and I wondered what Mack had done when he hadn't found the peeper. I could imagine he'd be in a towering rage. And I could imagine Greasy, considerably relieved, but wondering just the same what had happened to the peeper and perhaps rubbing it into Mack a little how he had been wrong.

I got the feeling that maybe it would be just as well if I stayed away a while. At least until mid-afternoon. By that time, perhaps, Mack would have cooled off a little.

And I thought about the Shadows.

Lousy savages, Thorne had said. Yet they were far from savages. They were perfect gentlemen (or ladies, God knows which they were, if either) and your genuine savage is no gentleman on a number of very fundamental points. The Shadows were clean in body, healthy and well-mannered. They had a certain cultural poise. They were, more than anything else, like a group of civilized campers, but unencumbered by the usual camp equipment.

THEY were giving us a going-over — there could be no doubt of that. They were learning all they could of us and why did they want to know? What use could they make of pots and pans and earthmovers and all the other things?

Or were they merely taking our measure before they clobbered us?

And there were all the other questions, too.

Where did they hang out?

How did they disappear, and when they disappeared, where did they go?

How did they eat and breathe?

How did they communicate?

Come right down to it, I admitted to myself, the Shadows undoubtedly knew a great deal more about us than we knew about them. Because when you tried to chalk up what we knew

about them, it came out to almost exactly nothing.

I sat under the tree for a while longer, with the thoughts spinning in my head and not adding up. Then I got to my feet and went over to the roller and got out the peeper.

It was the first time I'd ever had one in my hands and I was interested and slightly apprehensive. For a peeper was nothing one should monkey with.

It was a simple thing to look at — like a lopsided pair of binoculars, with a lot of selector knobs on each side and on the top of it.

You looked into it and you twisted the knobs until you had what you wanted and then there was a picture. You stepped into the picture and you lived the life you found there — the sort of life you picked by the setting of the knobs. And there were many lives to pick from, for there were millions of combinations that could be set up on the knobs and the factors ranged from the lightest kind of frippery to the most abysmal horror.

The peeper was outlawed, naturally — it was worse than alcoholism, worse than dope, the most insidious vice that had ever hit mankind. It threw psychic hooks deep into the soul and tugged forevermore. When a man acquired the habit, and it was easy to acquire, there was no get-

ting over it. He'd spend the rest of his life trying to sort out his life from all the fantasied ones, getting further and further from reality all the while, till nothing was real any more.

I squatted down beside the roller and tried to make some sense out of the knobs. There were thirty-nine of them, each numbered from one to thirty-nine, and I wondered what the numbering meant.

Benny came over and hunkered down beside me, with one shoulder touching mine, and watched what I was doing.

I PONDERED over the numbering, but pondering did no good. There was only one way to find out what I was looking for. So I set all the knobs back to zero on the graduated scales, then twisted No. 1 up a notch or two.

I knew that was not the way to work a peeper. In actual operation, one would set a number of the knobs at different settings, mixing in the factors in different proportions to make up the kind of life that one might want to sample. But I wasn't after a life. What I wanted to find out was what factor each of the knobs controlled.

So I set No. 1 up a notch or two and lifted the peeper and fitted it to my face and I was



back again in the meadow of my boyhood — a meadow that was green as no meadow ever was before, with a sky as blue as old-time watered silk and with a brook and butterflies.

And more than that — a meadow that lay in a day that would never end, a place that knew no time, and a sunlight that



was the bright glow of boyish happiness.

I knew exactly how the grass would feel beneath bare feet and I could remember how the sunlight would bounce off the wind-ripples of the brook. It was the hardest thing I ever did in my entire life, but I snatched the peeper from my eyes.

I squatted there, with the peeper cradled in my lap. My hands were unsteady, longing to lift the peeper so I could look once again at that scene out of a long-lost boyhood, but I made myself not do it.

No. 1 was not the knob I wanted, so I turned it back to zero and, since No. 1 was about

as far away as one could imagine from what I was looking for, I turned knob 39 up a notch or two.

I lifted the peeper halfway to my face and then I turned plain scared. I put it down again until I could get a good grip on my courage. Then I lifted it once more and stuck my face straight into a horror that reached out and tried to drag me in.

I can't describe it. Even now, I cannot recall one isolated fragment of what I really saw. Rather than seeing, it was pure impression and raw emotion — a sort of surrealist representation of all that is loathsome and repellent, and yet somehow retaining a hypnotic fascination that forbade retreat.

Shaken, I snatched the peeper from my face and sat frozen. For a moment, my mind was an utter blank, with stray wisps of horror streaming through it.

Then the wisps gradually cleared away and I was squatting once again on the hillside with the Shadow hunkered down beside me, his shoulder touching mine.

It was a terrible thing, I thought, an act no human could bring himself to do, even to a Shadow. Just turned up a notch or two, it was terrifying; turned on full power, it would twist one's brain.

BENNY reached out a hand to take the peeper from me. I jerked it away from him. But he kept on pawing for it and that gave me time to think.

This, I told myself, was exactly the way I had wanted it to be. All that was different was that Benny, by his nosiness, was making it easy for me to do the very thing I'd planned.

I thought of all that depended on our getting us a Shadow to examine. And I thought about my job and how it would bust my heart if the inspector should come come out and fire us and send in another crew. There just weren't planets lying around every day in the week to be engineered. I might never get another chance.

So I put out my thumb and shoved knob 39 to its final notch and let Benny have the peeper.

And even as I gave it to him, I wondered if it would really work or if I'd just had a pipe-dream. It might not work, I thought, for it was a human mechanism, designed for human use, keyed to the human nervous system and response.

Then I knew that I was wrong, that the peeper did not operate by virtue of its machinery alone, but by the reaction of the brain and the body of its user — that it was no more than a trigger mechanism to set loose the great-

ness and the beauty and the horror that lay within the user's brain. And horror, while it might take a different shape and form, appear in a different guise, was horror for a Shadow as well as for a human.

Benny lifted the peeper to that great single eye of his and thrust his head forward to fit into the viewer. Then I saw his body jerk and stiffen and I caught him as he toppled and eased him to the ground.

I stood there above him and felt the triumph and the pride — and perhaps a little pity, too — that it should be necessary to do a thing like this to a guy like Benny. To play a trick like this on my Shadow who had sat, just moments ago, with his shoulder touching mine.

I knelt down and turned him over. He didn't seem so heavy and I was glad of that, because I'd have to get him on the roller and then make a dash for camp, going as fast as I could gun the roller, because there was no telling how long Benny would stay knocked out.

I picked up the peeper and stuck it back into the roller's bag, then hunted for some rope or wire to tie Benny on so he would not fall off.

I don't know if I heard a noise or not. I'm half inclined to think that there wasn't any noise — that

it was some sort of built-in alarm system that made me turn around.

Benny was sagging in upon himself and I had a moment of wild panic, thinking that he might be dead, that the shock of the horror that leaped out of the peeper at him had been too much for him to stand.

And I remembered what Mack had said: "Never kill a thing until you have figured out just how efficiently it may up and kill you back."

If Benny was dead, then we might have all hell exploding in our laps.

IF he was dead, though, he sure was acting funny. He was sinking in and splitting at a lot of different places, and he was turning to what looked like dust, but wasn't dust, and then there wasn't any Benny. There was just the harness with the bag and the jewel and then there wasn't any bag, but a handful of trinkets lying on the ground where the bag had been.

And there was something else.

There still was Benny's eye. The eye was a part of a cone that had been in Benny's head.

I recalled how the survey party had seen other cones like that, but had not been able to get close to them.

I was too scared to move. I

stood and looked and there were a lot of goose pimples rising on my hide.

For Benny was no alien. Benny was no more than the proxy of some other alien that we had never seen and could not even guess at.

All sorts of conjectures went tumbling through my brain, but they were no more than panic-pictures, and they flipped off and on so fast, I couldn't settle on any one of them.

But one thing was clear as day — the cleverness of this alien for which the Shadows were the front.

Too clever to confront us with anything that was more than remotely human in its shape — a thing for which we could feel pity or contempt or perhaps exasperation, but something that would never rouse a fear within us. A pitiful little figure that was a caricature of our shape and one that was so stupid that it couldn't even talk. And one that was sufficiently alien to keep us puzzled and stump us on so many basic points that we would, at last, give up in sheer bewilderment any attempts that we might make to get it puzzled out.

I threw a quick glance over my shoulder and kept my shoulders hunched, and if anything had moved, I'd have run like a frightened rabbit. But nothing

moved. Nothing even rustled. There was nothing to be afraid of except the thoughts within my head.

But I felt a frantic urge to get out of there and I went down on my hands and knees and began to gather what was left of Benny.

I scooped up the pile of trinkets and the jewel and dumped them in the bag along with the peeper. Then I went back and picked up the cone, with the one eye looking at me, but I could see that the eye was dead. The cone was slippery and it didn't feel like metal, but it was heavy and hard to get a good grip on and I had quite a time with it. But I finally got it in the bag and started out for camp.

I went like a bat winging out of hell. Fear was roosting on one shoulder and I kept that roller wheeling.

I SWUNG into camp and headed for Mack's tent, but before I got there, I found what looked like the entire project crew working at the craziest sort of contraption one would ever hope to see. It was a mass of gears and cams and wheels and chains and whatnot, and it sprawled over what, back home, would have been a good-sized lot, and there was no reason I could figure for building anything like that.

I saw Thorne standing off to one side and superintending the work, yelling first at this one and then at someone else, and I could see that he was enjoying himself. Thorne was that kind of bossy jerk.

I stopped the roller beside him and balanced it with one leg.

"What's going on?" I asked him.

"We're giving them something to get doped out," he said. "We're going to drive them crazy."

"Them? You mean the Shadows?"

"They want information, don't they?" Thorne demanded. "They've been underfoot day and night, always in the way, so now we give them something to keep them occupied."

"But what does it do?"

Thorne spat derisively. "Nothing. That's the beauty of it."

"Well," I said, "I suppose you know what you're doing. Does Mack know what's going on?"

"Mack and Carr and Knight are the big brains that thought it up," said Thorne. "I'm just carrying out orders."

I went on to Mack's tent and parked the roller there and I knew that Mack was inside, for I heard a lot of arguing.

I took the carrier bag and marched inside the tent and pushed my way up to the table and, up-ending the sack, emptied

the whole thing on the tabletop.

And I plumb forgot about the peeper being in there with all the other stuff.

There was nothing I could do about it. The peeper lay naked on the table and there was a terrible silence and I could see that in another second Mack would blow his jets.

He sucked in his breath to roar, but I beat him to it.

"Shut up, Mack!" I snapped. "I don't want to hear a word from you!"

I must have caught him by surprise, for he let his breath out slowly, looking at me funny while he did it, and Carr and Knight were just slightly frozen in position. The tent was deathly quiet.

"That was Benny," I said, motioning at the tabletop. "That is all that's left of him. A look in the peeper did it."

CARR came a bit unfrozen. "But the peeper! We looked everywhere—"

"I knew Greasy had it and I stole it when I got a hunch." "Remember, we were talking about how to catch a Shadow—"

"I'm going to bring charges against you!" howled Mack. "I'm going to make an example out of you! I'm going to—"

"You're going to shut up," I said at him. "You're going to stay

quiet and listen or I'll heave you out of here tin cup over appetite."

"Please!" begged Knight. "Please, gentlemen, let's act civilized."

And that was a hot one — him calling us gentlemen.

"It seems to me," said Carr, "that the matter of the peeper is somewhat immaterial if Bob has turned it to some useful purpose."

"Let's all sit down," Knight urged, "and maybe count to ten. Then Bob can tell us what is on his mind."

It was a good suggestion. We all sat down and I told them what had happened. They sat there listening, looking at all that junk on the table and especially at the cone, for it was lying on its side at one end of the table, where it had rolled, and it was looking at us with that dead and fishy eye.

"Those Shadows," I finished up, "aren't alive at all. They're just some sort of spy rig that something else is sending out. All we need to do is lure the Shadows off, one by one, and let them look into the peeper with knob 39 set full and —"

"It's no permanent solution," said Knight. "Fast as we destroyed them, there'd be other ones sent out."

I shook my head. "I don't think so. No matter how good that alien race may be, they can't

control those Shadows just by mental contact. My bet is that there are machines involved, and when we destroy a Shadow, it would be my hunch that we knock out a machine. And if we knock out enough of them, we'll give those other people so much headache that they may come out in the open and we can dicker with them."

"I'm afraid you're wrong," Knight answered. "This other race keeps hidden, I'd say, for some compelling reason. Maybe they have developed an underground civilization and never venture on the surface because it's a hostile environment to them. But maybe they keep track of what is doing on the surface by means of these cones of theirs. And when we showed up, they rigged the cones to look like something slightly human, something they felt sure we would accept, and sent them out to get a good close look."

MACK put up his hands and rubbed them back and forth across his head. "I don't like this hiding business. I like things out in the open where I can take a swipe at them and they can take a swipe at me. I'd have liked it a whole lot better if the Shadows had really been the aliens."

"I don't go for your underground race," Carr said to Knight.

"It doesn't seem to me you could produce such a civilization if you lived underground. You'd be shut away from all the phenomena of nature. You wouldn't —"

"All right," snapped Knight, "what's your idea?"

"They might have matter transmission — in fact, we know they do — whether by machine or mind, and that would mean that they'd never have to travel on the surface of the planet, but could transfer from place to place in the matter of a second. But they still would need to know what was going on, so they'd have their eyes and ears like a TV radar system —"

"You jokers are just talking round in circles," objected Mack. "You don't know what the score is."

"I suppose you do," Knight retorted.

"No, I don't," said Mack. "But I'm honest enough to say straight out I don't."

"I think Carr and Knight are too involved," I said. "These aliens might be hiding only until they find out what we're like — whether they can trust us or if it would be better to run us off the planet."

"Well," said Knight, "no matter how you figure it, you've got to admit that they probably know practically all there is to know about us — our technology

and our purpose and what kind of animals we are and they probably have picked up our language."

"They know too much," said Mack. "I'm getting scared."

There was a scrabbling at the flap and Thorne stuck in his head.

"Say, Mack," he said, "I got a good idea. How about setting up some guns in that contraption out there? When the Shadows crowd around —"

"No guns," Knight said firmly. "No rockets. No electrical traps. You do just what we told you. Produce all the useless motion you can. Get it as involved and as flashy as possible. But let it go at that."

Thorne withdrew sulkily.

KNIGHT explained to me: "We don't expect it to last too long, but it may keep them occupied for a week or so while we get some work done. When it begins to wear off, we'll fix up something else."

It was all right, I suppose, but it didn't sound too hot to me. At the best, it bought a little time and nothing more. It bought a little time, that is, if we could fool the Shadows. Somehow, I wasn't sure that we could fool them much. Ten to one, they'd spot the contraption as a phony the minute it was set in motion.

Mack got up and walked around the table. He lifted the cone and tucked it beneath one arm.

"I'll take this down to the shop," he said. "Maybe the boys can find out what it is."

"I can tell you now," said Carr. "It's what the aliens use to control the Shadows. Remember the cones the survey people saw? This is one of them. My guess is that it's some kind of a signal device that can transmit data back to base, wherever that might be."

"No matter," Mack said. "We'll cut into it and see what we can find."

"And the peeper?" I asked.

"I'll take care of that."

I reached out a hand and picked it up. "No, you won't. You're just the kind of bigot who would take it out and smash it."

"It's illegal," Mack declared.

Carr sided with me. "Not any more. It's a tool now — a weapon that we can use."

I handed it to Carr. "You take care of it. Put it in a good safe place. We may need it again before all this is over."

I gathered the junk that had been in Benny's bag and picked up the jewel and dropped it into a pocket of my coat.

Mack went out with the cone underneath his arm. The rest of us drifted outside the tent and

stood there, just a little footloose now that the excitement was all over.

"He'll have Greasy's hide," worried Knight.

"I'll talk to him," Carr said. "I'll make him see that Greasy may have done us a service by sneaking the thing out here."

"I suppose," I said, "I should tell Greasy what happened to the peeper."

Knight shook his head. "Let him sweat a while. It will do him good."

BACK in my tent, I tried to do some paper work, but I couldn't get my mind to settle down on it. I guess I was excited and I'm afraid that I missed Benny and I was tangled up with wondering just what the situation was, so far as the Shadows were concerned.

We had named them well, all right, for they were little more than shadows — meant to shadow us. But even knowing they were just camouflaged spy rigs, I still found it hard not to think of them as something that was alive.

They were no more than cones, of course, and the cones probably were no more than observation units for those hidden people who hung out somewhere on the planet. For thousands of years, perhaps, the cones had been watching while this race stayed

in hiding somewhere. But maybe more than watching. Maybe the cones were harvesters and planters — perhaps hunters and trappers — bringing back the plunder of the wilds to their hidden masters. More than likely, it had been the cones that had picked all the Orchard fruit.

And if there was a culture here, if another race had primal rights upon the planet, then what did that do to the claims that Earth might make? Did it mean we might be forced to relinquish this planet, after all — one of the few Earthlike planets found in years of exploration?

I sat at my desk and thought about the planning and the work and the money that had gone into this project, which, even so, was no more than a dribble compared to what eventually would be spent to make this into another Earth.

Even on this project center, we'd made no more than an initial start. In a few more weeks, the ships would begin bringing in the steel mill and that in itself was a tremendous task — to bring it in, assemble it, mine the ore to get it going and finally to put it into operation. But simpler and easier, infinitely so, than freight-ing out from Earth all the steel that would be needed to build this project alone.

We couldn't let it go down the drain. After all the years, after

all the planning and the work, in face of Earth's great need for more living space, we could not give up Stella IV. And yet we could not deny primal rights. If these beings, when they finally showed themselves, would say that they didn't want us here, then there would be no choice. We would simply have to clear out.

But before they threw us out, of course, they would steal us blind. Much of what we had would undoubtedly be of little value to them, but there would be some of it that they could use. No race can fail to enrich itself and its culture by contact with another. And the contact that these aliens had established was a completely one-sided bargain — the exchange flowed only in their direction.

They were, I told myself, just a bunch of cosmic sharpers.

I TOOK the junk that had been in Benny's bag out of my pocket and spread it on the desk and began to sort it out. There was the sector model and the roller and the desk and my little row of books and the pocket chess set and all the other stuff that belonged to me.

There was all the stuff but me.

Greasy's Shadow had carried a statuette of Greasy, but I found none of me and I was a little sore at Benny. He could have gone to

the extra effort to have made a statuette of me.

I rolled the things around on the desk top with a finger and wondered once again just how deeply they went. Might they not be patterns rather than just models? Perhaps, I told myself, letting my imagination run away with me, perhaps each of these little models carried in some sort of code a complete analysis and description of whatever the article might be. A human, making a survey or an analysis, would write a sheaf of notes, would capture the subject matter in a page or two of symbols. Maybe these little models were the equivalent of a human notebook, the aliens' way of writing.

And I wondered how they wrote, how they made the models, but there wasn't any answer.

I gave up trying to work and went out of the tent and climbed up the little rise to where Thorne and the men were building their flytrap for the Shadows.

They had put a lot of work and ingenuity into it and it made no sense at all — which, after all, was exactly what it was meant to do.

If we could get the Shadows busy enough trying to figure out what this new contraption was, maybe they'd leave us alone long enough to get some work done.

Thorne and his crew had gotten half a dozen replacement motors

out of the shop and had installed those to be used as power. Apparently they had used almost all the spare equipment parts they could find, for there were shafts and gears and cams and all sorts of other things all linked together in a mindless pattern. And here and there they had set up what looked like control boards, except, of course, that they controlled absolutely nothing, but were jammed with flashers and all sorts of other gimmicks until they looked like Christmas trees.

I stood around and watched until Greasy rang the dinner bell, then ran a foot race with all the others to get to the tables.

There was a lot of loud talk and joking, but no one wasted too much time eating. They bolted their food and hurried back to the fly-trap.

JUST before sunset, they set it going and it was the screwiest mass of meaningless motion that anyone had ever seen. Shafts were spinning madly and a million gears, it seemed, were meshing, and cams were wobbling with their smooth, irregular strokes, and pistons were going up and down and up and down.

It was all polished bright and it worked slicker than a whistle and it was producing nothing except motion, but it had a lot of fascination — even for a human. I

found myself standing rooted in one spot, marveling at the smoothness and precision and the remorseless non-purpose of the weird contraption.

And all the time the fake control boards were sparkling and flashing with the lamps popping on and off, in little jagged runs and series, and you got dizzy watching them, trying to make some pattern out of them.

The Shadows had been standing around and gaping ever since work had started on the trap, but now they crowded closer and stood in a tight and solemn ring around the thing and they never moved.

I turned around and Mack was just behind me. He was rubbing his hands in satisfaction and his face was all lit up with smiles.

"Pretty slick," he said.

I agreed with him, but I had some doubts that I could not quite express.

"We'll string up some lights," said Mack, "so they can see it day and night and then we'll have them pegged for good."

"You think they'll stay with it?" I asked. "They won't catch on?"

"Not a chance."

I went down to my tent and poured myself a good stiff drink, then sat down in a chair in front of the tent.

Some of the men were stringing cable and others were rigging up some batteries of lights and down

in the cookshack I could hear Greasy singing, but the song was sad. I felt sorry for Greasy.

Mack might be right, I admitted to myself. We might have built a trap that would cook the Shadows' goose. If nothing else, the sheer fascination of all that motion might keep them stuck there. It had a hypnotic effect even for a human and one could never gauge what effect it might have on an alien mind. Despite the evident technology of the aliens, it was entirely possible that their machine technology might have developed along some divergent line, so that the spinning wheel and the plunging piston and the smooth fluid gleam of metal was new to them.

I tried to imagine a machine technology that would require no motion, but such a thing was entirely inconceivable to me. And for that very reason, I thought, the idea of all this motion might be just as inconceivable to an alien intellect.

THE stars came out while I sat there and no one wandered over to gab and that was fine. I was just as satisfied to be left alone.

After a time, I went into the tent, had another drink and decided to go to bed.

I took off my coat and slung it on the desk. When it hit, there was a thump, and as soon as I heard

that thump, I knew what it was. I had dropped Benny's jewel into the pocket of the coat and had then forgotten it.

I fished into the pocket and got out the jewel, fearing all the while that I had broken it. And there was something wrong with it — it had somehow come apart. The jewel face had come loose from the rest of it and I saw that the jewel was no more than a cover for a box-shaped receptacle.

I put it on the desk and swung the jewel face open and there, inside the receptacle, I found myself.

The statuette was nestled inside a weird piece of mechanism and it was as fine a piece of work as Greasy's statuette.

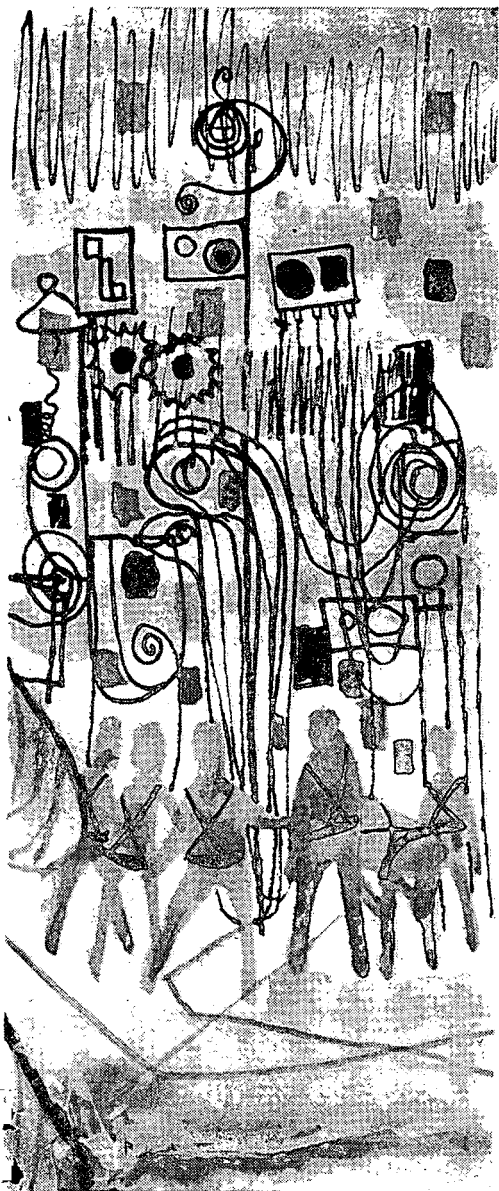
It gave me a flush of pride and satisfaction. Benny, after all, had not forgotten me!

I sat for a long time looking at the statuette, trying to puzzle out the mechanism. I had a good look at the jewel and I finally figured out what it was all about.

The jewel was no jewel at all; it was a camera. Except that instead of taking two-dimensional pictures, it worked in three dimensions. And that, of course, was how the Shadows made the models. Or maybe they were patterns rather than just models.

I finished undressing and got into bed and lay on the cot, staring at the canvas, and the pieces all





began to fall together and it was beautiful. Beautiful, that is, for the aliens. It made us look like a bunch of saps.

The cones had gone out and watched the survey party and had not let it get close to them, but they had been ready for us when we came. They'd disguised the cones to look like something that we wouldn't be afraid of, something perhaps that we could even laugh at it. And that was the safest kind of disguise that anyone could assume — something that the victim might think was mildly funny. For no one gets too upset about what a clown might do.

But the Shadows had been loaded and they'd let us have it and apparently, by the time we woke up, they had us pegged and labeled.

And what would they do now? Still stay behind their log, still keep watching us, suck us dry of everything that we had to offer?

And when they were ready, when they'd gotten all they wanted or all they felt that they could get, they'd come out and finish us.

I was somewhat scared and angry and felt considerably like a fool and it was frustrating just to think about.

MACK might kid himself that he had solved the problem with his flytrap out there, but there was still a job to do. Somehow or

other, we had to track down these hiding aliens and break up their little game.

Somewhere along the way, I went to sleep, and suddenly someone was shaking me and yelling for me to get out.

I came half upright and saw that it was Carr who had been shaking me. He was practically gibbering. He kept pointing outside and babbling something about a funny cloud and I couldn't get much more out of him.

So I shucked into my trousers and my shoes and went out with him and headed for the hilltop at a run. Dawn was just breaking and the Shadows still were clustered around the flytrap and a crowd of men had gathered just beyond the flytrap and were looking toward the east.

We pushed our way through the crowd up to the front and there was the cloud that Carr had been jabbering about, but it was a good deal closer now and was sailing across the plains, slowly and majestically, and flying above it was a little silver sphere that flashed and glittered in the first rays of the sun.

The cloud looked, more than anything, like a mass of junk. I could see what looked like a derick sticking out of it and here and there what seemed to be a wheel. I tried to figure out what it might be, but I couldn't, and all

the time it was moving closer to us.

Mack was at my left and I spoke to him, but he didn't answer me. He was just like Benny — he couldn't answer me. He looked hypnotized.

The closer that cloud came, the more fantastic it was and the more unbelievable. For there was no question now that it was a mass of machinery, just like the equipment we had. There were tractors and earthmovers and shovels and dozers and all the other stuff, and in between these bigger pieces was all sorts of little stuff.

In another five minutes, it was hovering almost over us and then slowly it began to lower. While we watched, it came down to the ground, gently, almost without a bump, even though there were a couple or three acres of it. Besides the big equipment, there were tents and cups and spoons and tables and chairs and benches and a case or two of whisky and some surveying equipment — there was, it seemed to me, almost exactly all the items there were in the camp.

When it had all sat down, the little silver sphere came down, too, and floated slowly toward us. It stopped a little way away from us and Mack walked out toward it and I followed Mack. Out of the corner of my eye, I saw that Carr and Knight were walking forward, too.

WE STOPPED four or five feet from it and now we saw that the sphere was some sort of protective suit. Inside it sat a pale little humanoid. Not human, but at least with two legs and arms and a single head. He had antennae sprouting from his forehead and his ears were long and pointed and he had no hair at all.

He let the sphere set down on the ground and we got a little closer and squatted down so we would be on a level with him.

He jerked a thumb backward over his shoulder, pointing at the mass of equipment he'd brought.

"Is pay," he announced in a shrill, high, piping voice.

We didn't answer right away. We did some gulping first.

"Is pay for what?" Knight finally managed to ask him.

"For fun," the creature said.

"I don't understand," said Mack.

"We make one of everything. We not know what you want, so we make one of all. Unfortunate, two lots are missing. Accident, perhaps."

"The models," I said to the others. "That's what he's talking about. The models were patterns and the models from Greasy's Shadow and from Benny —"

"Not all," the creature said. "The rest be right along."

"Now wait a minute," said Carr. "Let us get this straight. You are paying us. Paying us for what?

Exactly what did we do for you?"

Mack blurted out: "How did you make this stuff?"

"One question at a time," I pleaded.

"Machines can make," the creature said. "Knowing how, machines can make anything. Very good machines."

"But why?" asked Carr again. "Why did you make it for us?"

"For fun," the creature explained patiently. "For laugh. For watch. Is a big word I cannot —"

"Entertainment?" I offered.

"That is right," the creature said. "Entertainment is the word. We have lot of time for entertainment. We stay home, watch our entertainment screen. We get tired of it. We seek for something new. You something new. Give us much interesting. We try to pay you for it."

"Good Lord!" exclaimed Knight. "I begin to get it now. We were a big news event and so they sent out all those cones to cover us. Mack, did you saw into that cone last night?"

"We did," said Mack. "As near as we could figure, it was a TV sender. Not like ours, of course — there would be differences. But we figured it for a data-sending rig."

I TURNED back to the alien in his shiny sphere. "Listen carefully," I said. "Let's get down to business. You are willing to keep

on paying if we provide you entertainment?"

"Gladly," said the creature. "You keep us entertained, we give you what you want."

"Instead of one of everything, you will make us many of one thing?"

"You show it to us," the creature said. "You let us know how many."

"Steel?" asked Mack. "You can make us steel?"

"No recognize this steel. Show us. How made, how big, how shaped. We make."

"If we keep you entertained?"

"That right," the creature said.

"Deal?" I asked.

"Deal," the creature said.

"From now on? No stopping?"

"Long as you keep us happy."

"That may take some doing," Mack told me.

"No, it won't," I said.

"You're crazy!" Mack yelled.

"They'll never let us have them!"

"Yes, they will," I answered.

"Earth will do anything to cinch this planet. And don't you see, with this sort of swap, we'll beat the cost. All Earth has to do is send out one sample of everything we need. One sample will do the trick. One I-beam and they'll make a million of them. It's the best deal Earth has ever made."

"We do our part," the creature assured us happily. "Long as you do yours."

"I'll get that order right off now," I said to Mack. "I'll write it up and have Jack send it out."

I STOOD up and headed back toward camp.

"Rest of it," the creature said, motioning over his shoulder.

I swung around and looked.

There was another mass of stuff coming in, keeping fairly low. And this time it was men — a solid press of men.

"Hey!" cried Mack. "You can't do that! That just isn't right!"

I didn't need to look. I knew exactly what had happened. The aliens had duplicated not only our equipment, but the men as well. In that crowd of men were the duplicates of every one of us — everyone, that is, except myself and Greasy.

Horried as I might have been, outraged as any human would be, I couldn't help but think of some of the situations that might arise. Imagine two Macks insisting on bossing the operation! Picture two Thornes trying to get along together!

I didn't hang around. I left Mack and the rest of them to explain why men should not be duplicated. In my tent, I sat down and wrote an imperative, high-priority, *must-deliver* order for five hundred peepers.

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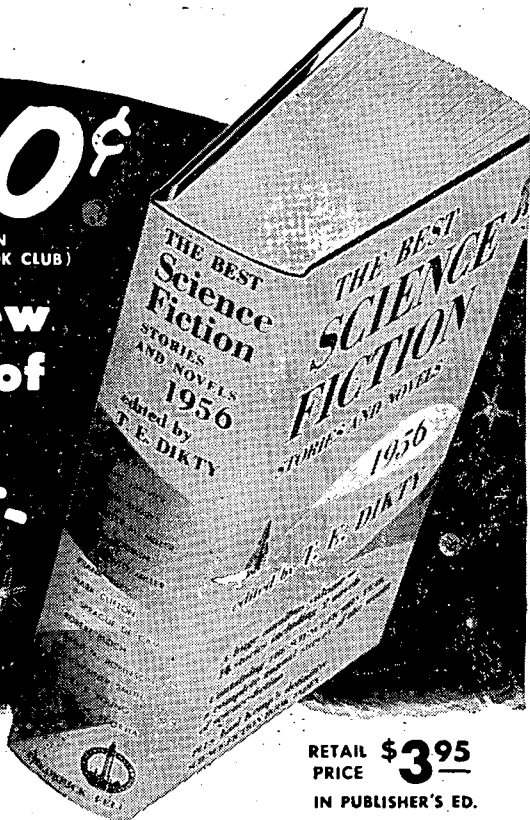
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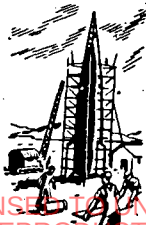
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